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BUREAU OF WATER AND WASTEWATER
WATER & WASTEWATER ENGINEERING DIVISION

INTEGRATED PLANNING FRAMEWORK
DRAFT SUMMARY REPORT
APPENDICES

January 2013

Rudolph S. Chow, PE, Bureau Head
Bureau of Water & Wastewater

MWH-LBWS JOINT VENTURE

Rudolph S. Chow, P.E.

List of Appendices

APPENDIX A

BALTIMORE INTEGRATED PLANNING PROJECT LISTS

Appendix A, Baltimore Integrated Planning Project Lists

Table A.1, Baltimore Integrated Planning Total CIP Project List

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
SWU	520-102	Small Storm Drain and Inlet Repair	Safety/Asset Mgt.	N	1/2024
SWU	520-093	Race Street Box Culvert	Conditional Asset Mgt.	N	1/2013
SWU	520-715	Northeast Baltimore Drainage Improvements	Flood Safety	N	1/2016
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	Flood Safety	N	10/2013
SWU	520-708	Storm Water Pumping Stations Improvements	O&M	N	4/2013
SWU	520-451	Fairmount Storm Drain Improvements	TMDL	N	10/2013
SWU	520-NEW	Patapsco Avenue Drainage Improvement	Flood Safety	N	7/2015
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	Asset Mgt.	N	7/2015
SWU	520-NEW	North Point Road Drainage Improvement	Flood Safety	N	10/2014
SWU	520-NEW	2300 Block Seamon Ave	CIP	N	4/2014
SWU	520-NEW	Harris Creek Storm Drainage	CIP	N	7/2019
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	Bay TMDL	Y	5/2015
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	Bay TMDL	Y	1/2016
SWF	525-405	ER4018 Powder Mill Run	Bay TMDL	Y	7/2014
SWF	525-407	Moores Run Wetlands ER4004	Bay TMDL	Y	9/2013
SWF	525-407	Large SWM BMP	Bay TMDL	Y	1/2017
SWF	525-449	ER4016 Bush Street Debris Collector	Bay TMDL	Y	4/2014
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	Bay TMDL	Y	7/2015
SWF	525-NEW	ER4021 Chinquapin Run Environmental Restoration Project 1 (Lower 2200 ft)	Bay TMDL	Y	7/2015
SWF	525-NEW	ER40XX Chinquapin Run Environmental Restoration Project 2 (Upper 2600 ft)	Bay TMDL	Y	3/2016
SWF	525-NEW	ER4020 Lower Lower Stony Run Environmental Restoration Project (4500 Ft)	Bay TMDL	Y	7/2013
SWF	525-NEW	ER40XX East Stony Run Environmental Restoration Project 2 (Upper East Stony approximately 1340 ft)	Bay TMDL	Y	1/2016
SWF	525-NEW	ER4013 Moores Run Environmental Restoration Project 2 (Stream Restoration Project 2500 ft)	Bay TMDL	Y	10/2014
SWF	525-NEW	ER40XX Moores Run Environmental Restoration Project 3 (Stream Restoration Project 2500 ft)	Bay TMDL	Y	3/2016
SWF	525-NEW	ER40XX Moores Run Environmental Restoration Project 4 (Stream Restoration Project 2500 ft)	Bay TMDL	Y	7/2016
SWF	525-NEW	ER40XX Stream Restoration TBD (2,400 LF)	Bay TMDL	Y	7/2016
SWF	525-NEW	ER40XX Stream Restoration TBD (2,400 LF)	Bay TMDL	Y	10/2016
SWF	525-NEW	ER40XX Stream Restoration TBD (2,400 LF)	Bay TMDL	Y	10/2016
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	Trash TMDL	Y	6/2015
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	Trash TMDL	Y	7/2017
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	Trash TMDL	Y	7/2017
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	Trash TMDL	Y	7/2018
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	Bay TMDL	Y	7/2016
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	Bay TMDL	Y	7/2016
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	Bay TMDL	Y	1/2017
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	Bay TMDL	Y	7/2017
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	Bay TMDL	Y	9/2015
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	Bay TMDL	Y	9/2016
SWF	525-NEW	Facility Greening Projects Jones Falls WS	Bay TMDL	Y	9/2016
SWF	525-NEW	Facility Greening Projects Back River WS	Bay TMDL	Y	9/2017
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	Trash TMDL	Y	3/2014
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	Trash TMDL	Y	3/2014
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	Trash TMDL	Y	3/2016

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	Trash TMDL	Y	1/2017
WU	557-002	Water Utility Billing System	CIP	N	7/2017
WU	557-031	Water Appurtenance Installations PAS	CIP	N	12/2014
WU	557-031	Water Appurtenance Installations Construction	CIP	N	12/2014
WU	557-031	WC 1212 Water Appurtenance	CIP	N	12/2012
WU	557-031	Future - Water Appurtenance Installations PAS	CIP	N	Biannual
WU	557-031	Future - Water Appurtenance Installations Construction	CIP	N	Biannual
WU	557-099	GIS Engineering Support (Amendment 3)	CIP	N	6/2013
WU	557-099	GIS Engineering Support	CIP	N	1/2019
WU	557-099	GIS/Mapping	CIP	N	11/2013
WU	557-099	Future Annual GIS/Mapping	CIP	N	12/2018
WU	557-099	New Aerial Photography	CIP	N	1/2014
WU	557-099	Future Annual Aerial Photography	CIP	N	1/2019
WU	557-099	County Water Data in City GIS	CIP	N	1/2014
WU	557-100	Water Infrastructure Rehab Fells Point/Butchers Hill Design	CIP	N	1/2014
WU	557-100	Water Infrastructure Rehab Fells Point/Butchers Hill Construction	CIP	N	1/2014
WU	557-100	Water Infrastructure Rehab Fells Point/Butchers Hill Construction	CIP	N	1/2014
WU	557-100	Water Infrastructure Rehab Construction - Various Locations Design	CIP	N	5/2013
WU	557-100	Water Infrastructure Rehab Construction - Various Locations Construction	CIP	N	5/2013
WU	557-100	Water Infrastructure Rehab Construction - Various Locations PAS	CIP	N	5/2013
WU	557-100	Water Infrastructure Rehab Carver Vo-Tech HS Area Design	CIP	N	5/2013
WU	557-100	Water Infrastructure Rehab Carver Vo-Tech HS Area Construction	CIP	N	10/2013
WU	557-100	Water Infrastructure Rehab Carver Vo-Tech HS Area PAS	CIP	N	10/2013
WU	557-100	Water Infrastructure Rehab W. Forest Park Ave./Mohawk Ave/Keswick Rd Area Design	CIP	N	5/2013
WU	557-100	Water Infrastructure Rehab W. Forest Park Ave./Mohawk Ave/Keswick Rd Area Construction	CIP	N	5/2013
WU	557-100	Water Infrastructure Rehab W. Forest Park Ave./Mohawk Ave/Keswick Rd Area Design	CIP	N	5/2013
WU	557-100	Water Infrastructure Rehab W. Forest Park Ave./Mohawk Ave/Keswick Rd Area Construction	CIP	N	5/2013
WU	557-100	Water Infrastructure Rehab W. Forest Park Ave./Mohawk Ave/Keswick Rd Area PAS	CIP	N	5/2013
WU	557-100	Design for WC 1226	CIP	N	1/2014
WU	557-100	Rehab & Replacement of Water Mains & Appurtenances, Various Areas Construction	CIP	N	7/2014
WU	557-100	Rehab & Replacement of Water Mains & Appurtenances, Various Areas PAS	CIP	N	7/2014
WU	557-100	Water Infrastructure Rehab, Various Location Design	CIP	N	5/2013
WU	557-100	Water Infrastructure Rehab, Various Location Constuction	CIP	N	4/2014
WU	557-100	Water Infrastructure Rehab, Various Location PAS	CIP	N	4/2014
WU	557-100	Replacement & Rehab Water Mains & App #1 Design	CIP	N	4/2014
WU	557-100	Replacement & Rehab Water Mains & App #1 Construction	CIP	N	1/2016
WU	557-100	Replacement & Rehab Water Mains & App #1 PAS	CIP	N	1/2016
WU	557-100	Replacement & Rehab Water Mains & App #2 Design - Project 1128R & Project 1095E	CIP	N	5/2013
WU	557-100	Replacement & Rehab Water Mains & App #2 Construction	CIP	N	1/2015
WU	557-100	Replacement & Rehab Water Mains & App #2 PAS	CIP	N	1/2015
WU	557-100	Replacement & Rehab Water Mains & App #2 Design - Project 1133E	CIP	N	5/2013
WU	557-100	Replacement & Rehab Water Mains & App #2 Construction	CIP	N	1/2015
WU	557-100	Replacement & Rehab Water Mains & App #2 PAS	CIP	N	1/2015
WU	557-100	Replacement & Rehab Water Mains & App #2 Design - 1128P	CIP	N	5/2013
WU	557-100	Replacement & Rehab Water Mains & App #2 Construction	CIP	N	1/2015
WU	557-100	Replacement & Rehab Water Mains & App #2 PAS	CIP	N	1/2015
WU	557-100	Future Water Main Replacement Design	CIP	N	n/a
WU	557-100	Future Water Main Replacement Construction	CIP	N	n/a
WU	557-100	Future Water Main Replacement PAS	CIP	N	n/a

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WU	557-101	Water Mains - Install - Dundalk Avenue PAS	CIP	N	5/2014
WU	557-101	Water Mains - Dundalk Avenue Construction	CIP	N	5/2014
WU	557-101	Water Mains - Rehab of Broening Hwy PAS	CIP	N	2/2014
WU	557-101	Water Mains - Rehab of Broening Hwy Construction	CIP	N	2/2014
WU	557-101	Water Mains - N. Charles Street Reconstr PAS	CIP	N	2/2014
WU	557-101	Water Mains - N. Charles Street Recon Constr	CIP	N	2/2014
WU	557-101	EBDI Phase II, Park Circle Design	CIP	N	2/2013
WU	557-101	EBDI Phase II, Park Circle PAS	CIP	N	7/2014
WU	557-101	EBDI Phase II, Park Circle Construction	CIP	N	7/2014
WU	557-130	Water System Cathodic Protection	CIP	N	12/2011
WU	557-130	Water System Cathodic Protection	CIP	N	2/2014
WU	557-130	Water System Cathodic Protection	CIP	N	2/2014
WU	557-130	Future Cathodic Work	CIP	N	Biannual
WU	557-133	Meter Setting Replacements PAS	CIP	N	7/2013
WU	557-133	Meter Setting Replacements Construction-southeast $2.4m	CIP	N	2/2014
WU	557-133	Meter Setting Replacements Construction-southwest $3.4m	CIP	N	2/2014
WU	557-133	Meter Setting Replacements Construction-north $4.1m	CIP	N	2/2014
WU	557-133	Meter Setting Replacements Construction-northeast $5.5m	CIP	N	2/2014
WU	557-133	Meter Setting Replacement & Main Rehab-all over Design	CIP	N	3/2014
WU	557-133	Meter Setting Replacement & Main Rehab-all over Construction	CIP	N	3/2014
WU	557-133	Meter Setting Replacement & Main Rehab-all over PAS	CIP	N	3/2014
WU	557-133	Can not Locate Meters and Meter Settign Replacements Design	CIP	N	3/2014
WU	557-133	Can not Locate Meters and Meter Settign Replacements Construction	CIP	N	4/2013
WU	557-133	Can not Locate Meters and Meter Settign Replacements PAS	CIP	N	4/2013
WU	557-133	R.G.Steel Meter Replacement, Balt. Co. PAS	CIP	N	1/2013
WU	557-133	R.G.Steel Meter Replace Balt. Co. Construct	CIP	N	1/2013
WU	557-133	AMR Program Management (EMA)	CIP	N	n/a
WU	557-133	AMR Water Meter Supply	CIP	N	n/a
WU	557-133	AMR Meters & Installation	CIP	N	n/a
WU	557-133	AMR Escavation	CIP	N	n/a
WU	New	In-House Design	CIP	N	5/2013
WU	New	Hanover St. Bridge 30" Steel WM	CIP	N	7/2012
WU	New	Hanover St. Bridge 30" Steel WM PAS	CIP	N	1/2013
WU	New	E. Fort Ave Bridge Over CSX 20" Large Water Main Replacement Design	CIP	N	5/2013
WU	New	E. Fort Ave Bridge Over CSX 20" Large Water Main Replacement Construction	CIP	N	10/2013
WU	New	E. Fort Ave Bridge Over CSX 20" Large Water Main Replacement PAS	CIP	N	10/2013
WU	557-400	Valve and Hydrant Exercising	CIP	N	10/2012
WU	557-400	Valve and Hydrant Exercising	CIP	N	3/2014
WU	557-400	Future Valve and Hydrant Work	CIP	N	n/a
WU	557-638	Water System Audit/Infrastructure Condition Assessment	CIP	N	7/2014
WU	557-638	Future Water System Audit/Infrastructure Condition Assessment	CIP	N	12/2018
WU	557-638	Proj 1108 Water Audit	CIP	N	3/2013
WU	557-638	Proj 1108 Water Audit CO	CIP	N	4/2013
WU	557-100	Replacement & Rehab Small Sections PCCP Mains Design	CIP	N	n/a
WU	557-100	Replacement & Rehab Small Sections PCCP Mains Construction	CIP	N	7/2013
WU	557-100	Replacement & Rehab Small Sections PCCP Mains PAS	CIP	N	7/2013
WU	557-689	Herring Run/Marley Neck Main Replacement Design	CIP	N	4/2014

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WU	557-100	Herring Run/Marley Neck Main Replacement Construction	CIP	N	3/2015
WU	557-100	Herring Run/Marley Neck Main Replacement PAS	CIP	N	3/2015
WU	557-687	Susquehanna Transmission Main Valve Replacement, Section 2 PAS	CIP	N	10/2013
WU	557-687	Susquehanna Transmission Main Valve Replacemen, Section 2 Construction	CIP	N	10/2013
WU	557-687	Susquehanna Transmission Main Valve Replacement, Section 1 Design	CIP	N	2/2015
WU	557-687	Susquehanna Transmission Main Valve Replacement, Section 1 PAS	CIP	N	10/2016
WU	557-687	Susquehanna Transmission Main Valve Replacement, Section 1 Construction	CIP	N	10/2016
WU	557-689	Water Infrastructure Rehab Design (Urgent Need)	O&M	N	1/2013
WU	557-689	Water Infrastructure Rehab Construction (Urgent Need)	O&M	N	1/2013
WU	557-689	Water Infrastructure Rehab PAS (Urgent Need)	O&M	N	7/2012
WU	557-689	Future Water Infrastructure Rehab Design (Urgent Need)	O&M	N	Biannual
WU	557-689	Future Water Infrastructure Rehab Construction (Urgent Need)	O&M	N	Biannual
WU	557-689	Future Water Infrastructure Rehab PAS (Urgent Need)	O&M	N	Biannual
WU	557-732	Monitoring Large Water Trans Mains	O&M	N	5/2014
WU	557-732	Future Monitoring Large Water Trans Mains	O&M	N	12/2018
WU	557-732	Inspection Program for Large Water Mains CO SW Main	O&M	N	1/2013
WU	NEW	Design for Water Main Rehabilitation and Replacement in Identified Areas	CIP	N	n/a
WU	NEW	Post-award Services for Water Main Replacements	CIP	N	n/a
WU	NEW	Large Valve Replacement	CIP	N	12/2018
WU	NEW	SCADA Upgrades	CIP	N	12/2018
WU	NEW	Water modeling	CIP	N	12/2018
WF	557-068-1	Loch Raven Culvert Design	O&M	N	8/2012
WF	557-068-1	Loch Raven Culvert Construction	O&M	N	1/2013
WF	557-068-1	Loch Raven Culvert PAS	O&M	N	1/2013
WF	557-068-2	Loch Raven Reservoir Road Paving Design	O&M	N	6/2011
WF	557-068-2	Loch Raven Reservoir Road Paving Construction	O&M	N	4/2013
WF	557-068-2	Loch Raven Reservoir Road Paving PAS	O&M	N	4/2013
WF	557-068-5	Prettyboy Culverts Design	O&M	N	10/2012
WF	557-068-5	Prettyboy Culverts Construction	O&M	N	1/2014
WF	557-068-5	Prettyboy Culverts PAS	O&M	N	1/2014
WF	557-068-3	Pretty Boy Reservoir Road Paving Design	O&M	N	12/2012
WF	557-068-3	Pretty Boy Reservoir Road Paving Construction	O&M	N	3/2014
WF	557-068-3	Pretty Boy Reservoir Road Paving PAS	O&M	N	3/2014
WF	557-068-4	Liberty Reservoir Road Paving Design	O&M	N	1/2014
WF	557-068-4	Liberty Reservoir Road Paving Construction	O&M	N	10/2014
WF	557-068-4	Liberty Reservoir Road Paving PAS	O&M	N	10/2014
WF	557-068-6	Liberty Culverts Design	O&M	N	10/2013
WF	557-068-6	Liberty Culverts Construction	O&M	N	1/2015
WF	557-068-6	Liberty Culverts PAS	O&M	N	1/2015
WF	557-070-1	Spooks Hill Road Bridge Maintenance Design	CIP	N	11/2013
WF	557-070-1	Spooks Hill Road Bridge Maintenance Construction	CIP	N	4/2015
WF	557-070-1	Spooks Hill Road Bridge Maintenance PAS	CIP	N	4/2015
WF	557-070-2	Warren Road Bridge Maintenance Design	CIP	N	6/2014
WF	557-070-2	Warren Road Bridge Maintenance Construction	CIP	N	7/2016
WF	557-070-2	Warren Road Bridge Maintenance PAS	CIP	N	7/2016
WF	557-070-3	Becklysville Road Bridge Maintenance Design	CIP	N	6/2014
WF	557-070-3	Beckleysville Road Bridge Maintenance Construction	CIP	N	7/2015

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WF	557-070-3	Beckleysville Road Bridge Maintenance PAS	CIP	N	7/2015
WF	557-070-4	Prettyboy Dam Bridge Deck Repairs Study	CIP	N	1/2015
WF	557-070-4	Prettyboy Dam Bridge Deck Repairs Design	CIP	N	7/2016
WF	557-070-4	Prettyboy Dam Bridge Deck Repairs Construction	CIP	N	4/2017
WF	557-070-4	Prettyboy Dam Bridge Deck Repairs PAS	CIP	N	4/2017
WF	557-070-5	Phoenix Road (Loch Raven) Study	CIP	N	8/2014
WF	557-070-5	Phoenix Road (Loch Raven) Design	CIP	N	10/2015
WF	557-070-5	Phoenix Road (Loch Raven) Construction	CIP	N	10/2017
WF	557-070-5	Phoenix Road (Loch Raven) PAS	CIP	N	10/2017
WF	557-070-6	George's Creek Road Construction	CIP	N	9/2012
WF	557-070-6	George's Creek Road PAS	CIP	N	9/2012
WF	557-070-7	Loch Raven Drive Study	CIP	N	11/2014
WF	557-070-7	Loch Raven Drive Design	CIP	N	9/2015
WF	557-070-7	Loch Raven Drive Construction	CIP	N	9/2016
WF	557-070-7	Loch Raven Drive PAS	CIP	N	9/2017
WF	557-070-7	Loch Raven Drive Study	CIP	N	11/2015
WF	557-070-7	Loch Raven Drive Design	CIP	N	9/2016
WF	557-070-7	Loch Raven Drive Construction	CIP	N	9/2017
WF	557-070-7	Loch Raven Drive PAS	CIP	N	9/2016
WF	557-070-8	Cotter Road Study	CIP	N	11/2015
WF	557-070-8	Cotter Road Design	CIP	N	9/2016
WF	557-070-8	Cotter Road Construction	CIP	N	9/2017
WF	557-070-8	Cotter Road PAS	CIP	N	9/2017
WF	557-158	Earthen Dam Rehabilitation Study	MDE	Y	8/2012
WF	557-158	Earthen Dam Rehabilitation Design	MDE	Y	1/2014
WF	557-158	Earthen Dam Rehabilitation Construction	MDE	Y	1/2016
WF	557-158	Earthen Dam Rehabilitation PAS	MDE	Y	1/2016
WF	557-300	Annual Water Facility Improvements	O&M	N	Annual
WF	557-300	Ashburton WFP Low Life Pump Controls and Power Upgrade Study	O&M	N	1/2017
WF	557-300	Ashburton WFP Low Life Pump Controls and Power Upgrade Design	O&M	N	4/2018
WF	557-300	Ashburton WFP Low Life Pump Controls and Power Upgrade Construction	O&M	N	5/2020
WF	557-300	Ashburton WFP Low Life Pump Controls and Power Upgrade PAS	O&M	N	5/2020
WF	557-300	Montebello WFP EDH Switchgear Replacement Design	O&M	N	1/2015
WF	557-300	Montebello WFP EDH Switchgear Replacement Construction	O&M	N	7/2016
WF	557-300	Montebello WFP EDH Switchgear Replacement PAS	O&M	N	7/2016
WF	557-300	Ashburton WFP Generator Design	O&M	N	1/2013
WF	557-300	Ashburton WFP Generator Construction	O&M	N	9/2014
WF	557-300	Ashburton WFP Generator PAS	O&M	N	9/2014
WF	557-300	Montebello & WFP II Generator Design	O&M	N	1/2013
WF	557-300	Montebello & WFP II Generator Construction	O&M	N	7/2014
WF	557-300	Montebello & WFP II Generator PAS	O&M	N	7/2014
WF	557-300	Montebello & Ashburton WFPs Chemical Truck Scales Design	O&M	N	4/2013
WF	557-300	Montebello & Ashburton WFPs Chemical Truck Scales Construction	O&M	N	11/2014
WF	557-300	Montebello & Ashburton WFPs Chemical Truck Scales PAS	O&M	N	11/2014
WF	557-300	Montebello & Ashburton WFPs SCADA Single Platform Study	O&M	N	9/2012
WF	557-300	Montebello & Ashburton WFPs SCADA Single Platform Design	O&M	N	3/2014
WF	557-300	Montebello & Ashburton WFPs SCADA Single Platform Construction	O&M	N	7/2015

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WF	557-300	Montebello & Ashburton WFPs SCADA Single Platform PAS	O&M	N	7/2015
WF	557-300	Liberty Reservoir Dam Crest Repairs Study	O&M	N	9/2012
WF	557-300	Liberty Reservoir Dam Crest Repairs Design	O&M	N	12/2013
WF	557-300	Liberty Reservoir Dam Crest Repairs Construction	O&M	N	7/2016
WF	557-300	Liberty Reservoir Dam Crest Repairs PAS	O&M	N	7/2016
WF	557-300	Montebello WFP I Washwater Lake Dredging Design	O&M	N	6/2013
WF	557-300	Montebello WFP I Washwater Lake Dredging Construction	O&M	N	8/2015
WF	557-300	Montebello WFP I Washwater Lake Dredging PAS	O&M	N	8/2015
WF	557-300	Prettyboy Dam Sluice Gate & Crack Repairs Study	O&M	N	9/2012
WF	557-300	Prettyboy Dam Sluice Gate & Crack Repairs Design	O&M	N	10/2013
WF	557-300	Prettyboy Dam Sluice Gate & Crack Repairs Construction	O&M	N	7/2016
WF	557-300	Prettyboy Dam Sluice Gate & Crack Repairs PAS	O&M	N	7/2016
WF	TBD	Study	O&M	N	9/2012
WF	TBD	Ashburton WFP Washwater Lake Stream Restoration Design	O&M	N	1/2014
WF	TBD	Ashburton WFP Washwater Lake Stream Restoration Construction	O&M	N	7/2016
WF	TBD	Ashburton WFP Washwater Lake Stream Restoration PAS	O&M	N	7/2016
WF	557-312	Montebello Plant 1 Improvements Design	CIP	N	4/2015
WF	557-312	Montebello Plant 1 Improvements PAS	CIP	N	11/2020
WF	557-312	Montebello Plant 1 Improvements Construction	CIP	N	11/2020
WF	557-312	Montebello Plant 1 Improvements - Accelerated Design	CIP	N	4/2015
WF	557-312	Montebello Plant 1 Improvements - Accelerated PAS	CIP	N	11/2020
WF	557-312	Montebello Plant 1 Improvements - Accelerated Construction	CIP	N	11/2020
WF	557-312	Montebello Plant 1 Electrical Improvements Design	CIP	N	4/2014
WF	557-312	Montebello Plant 1 Electrical Improvements PAS	CIP	N	7/2015
WF	557-312	Montebello Plant 1 Electrical Improvements Construction	CIP	N	7/2016
WF	557-312	Montebello Plant 2 Improvements Study	CIP	N	12/2013
WF	557-312	Montebello Plant 2 Improvements Design	CIP	N	1/2018
WF	557-312	Montebello Plant 2 Improvements PAS	CIP	N	7/2023
WF	557-312	Montebello Plant 2 Improvements Construction	CIP	N	7/2023
WF	557-501	Montebello Lab Facilities Study/Design	EPA	Y	4/2013
WF	557-501	Montebello Lab Facilities PAS	EPA	Y	11/2015
WF	557-501	Montebello Lab Facilities Construction	EPA	Y	11/2015
WF	557-696	Chlorine Handling Safety Improvements Design	DHS	Y	4/2013
WF	557-696	Chlorine Handling Safety Improvements Pas	DHS	Y	1/2017
WF	557-696	Chlorine Handling Safety Improvements Construction	DHS	Y	7/2018
WF	557-709	Montebello 2 FW Reservoir Cover PAS	EPA/MDE	Y	10/2013
WF	557-709	Montebello 2 FW Reservoir Cover Construction	EPA/MDE	Y	10/2013
WF	557-709	Proj 1082 - CO #8 for WC 1160	EPA/MDE	Y	7/2013
WF	557-709	Guilford FW Reservoir Improvements Design	EPA/MDE	Y	12/2013
WF	557-709	Guilford FW Reservoir Improvements PAS	EPA/MDE	Y	8/2016
WF	557-709	Guilford FW Reservoir Improvements Construction	EPA/MDE	Y	8/2016
WF	557-713	Towson FW Reservoir Improvements PAS	EPA/MDE	Y	9/2013
WF	557-713	Towson FW Reservoir Improvements Construction	EPA/MDE	Y	9/2013
WF	557-715	Ashburton FW Reservoir Improvements (UV) Study	EPA/MDE	Y	1/1900
WF	557-715	Ashburton FW Reservoir Improvements (UV) Design	EPA/MDE	Y	4/2014
WF	557-715	Ashburton FW Reservoir Improvements (UV) PAS	EPA/MDE	Y	12/2018
WF	557-715	Ashburton FW Reservoir Impr (UV) Construction	EPA/MDE	Y	12/2018

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WF	557-716	Druid Lake FW Reservoir Improvements (UV) Study	EPA/MDE	Y	n/a
WF	557-716	Druid Lake FW Reservoir Improvements (UV) Design	EPA/MDE	Y	2/2015
WF	557-716	Druid Lake FW Reservoir Improvements (UV) PAS	EPA/MDE	Y	7/2018
WF	557-716	Druid Lake FW Reservoir Impr (UV) Construction	EPA/MDE	Y	7/2018
WF	557-727	Deer Creek Pumping Station Improvements PAS	CIP	N	9/2013
WF	557-727	Deer Creek Pumping Station Improvements Construction	CIP	N	9/2013
WF	557-730	Fullerton Water Filtration Plant Design	CIP	N	12/2014
WF	557-730	Fullerton Water Filtration Plant PAS	CIP	N	9/2020
WF	557-730	Fullerton Water Filtration Plant Construction	CIP	N	9/2020
WF	557-731	Montebello Water Recycle Program Design	CIP	N	6/2012
WF	557-731	Montebello Water Recycle Program PAS	CIP	N	7/2015
WF	557-731	Montebello Water Recycle Program Construction	CIP	N	7/2015
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam Design	CIP	N	1/2014
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam PAS	CIP	N	7/2016
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam Construction	CIP	N	7/2016
WF	557-921	Maint Bldg. Impr. At Liberty Dam Study	CIP	N	12/2011
WF	557-921	Maint Bldg. Impr. At Liberty Dam Design	CIP	N	7/2014
WF	557-921	Maint Bldg. Impr. At Liberty Dam PAS	CIP	N	1/2017
WF	557-921	Maint Bldg. Impr. At Liberty Dam Construction	CIP	N	1/2017
WF	557-917	Guilford Pumping Station Rehabilitation Design	CIP/DHS	Y	5/2013
WF	557-917	Guilford Pumping Station Rehabilitation PAS	CIP/DHS	Y	9/2017
WF	557-917	Guilford Pumping Station Rehabilitation Construction	CIP/DHS	Y	9/2019
WF	557-922	Vernon Pump Station Rehabilitation Study	CIP/DHS	Y	n/a
WF	557-922	Vernon Pump Station Rehabilitation Design	CIP/DHS	Y	3/2014
WF	557-922	Vernon Pump Station Rehabilitation PAS	CIP/DHS	Y	3/2017
WF	557-922	Vernon Pump Station Rehabilitation Construction	CIP/DHS	Y	3/2017
WF	557-923	Cromwell Pump Station Rehabilitation Study	CIP/DHS	Y	n/a
WF	557-923	Cromwell Pump Station Rehabilitation Design	CIP/DHS	Y	3/2014
WF	557-923	Cromwell Pump Station Rehabilitation PAS	CIP/DHS	Y	3/2017
WF	557-923	Cromwell Pump Station Rehabilitation Construction	CIP/DHS	Y	3/2017
WF	557-924	Pikesville Pump Station Rehabilitation Study	CIP/DHS	Y	7/2013
WF	557-924	Pikesville Pump Station Rehabilitation Design	CIP/DHS	Y	1/2015
WF	557-924	Pikesville Pump Station Rehabilitation PAS	CIP/DHS	Y	1/2018
WF	557-924	Pikesville Pump Station Rehabilitation Construction	CIP/DHS	Y	1/2018
WF	557-926	Towson Pump Station Rehabilitation Study	CIP/DHS	Y	7/2014
WF	557-926	Towson Pump Station Rehabilitation Design	CIP/DHS	Y	7/2016
WF	557-926	Towson Pump Station Rehabilitation PAS	CIP/DHS	Y	1/2019
WF	557-926	Towson Pump Station Rehabilitation Construction	CIP/DHS	Y	1/2019
WF	557-928	Ashburton Pump Station Rehabilitation Design	CIP/DHS	Y	2/2014
WF	557-928	Ashburton Pump Station Rehabilitation PAS	CIP/DHS	Y	9/2017
WF	557-928	Ashburton Pump Station Rehabilitation Construction	CIP/DHS	Y	9/2017
WF	557-927	Ashburton Chemical Laboratory Study	Proactive	N	4/2019
WF	557-927	Ashburton Chemical Laboratory Design	Proactive	N	5/2020
WF	557-927	Ashburton Chemical Laboratory Construction	Proactive	N	11/2022
WF	557-927	Ashburton Chemical Laboratory PAS	Proactive	N	11/2022
WF	557-928	Misc. Urgent Needs - Dredging et al	O&M	N	7/2014
WF	551-573	Raw water Tunnel Inspections	CIP	N	9/2016

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WF	NEW	Water Recycling and Solids Handling - Ashburton	CIP	N	12/2023
WF	NEW	Inspection/Maintenance of PS'S	O&M	N	n/a
WF	NEW	Personnel training in Electrical and Instrumentation certification.	State	Y	7/2018
WF	NEW	Staffing Needs	O&M	N	7/2018
WF	NEW	Preventive Maintenace Program	O&M	N	7/2018
WF	NEW	Montebello Washwater Lake Dredging & Remediation	CIP	N	7/2015
WF	NEW	Hydropower Study	CIP	N	6/2023
WF	NEW	Baltimore City Water Bottling - Feasibility Study	CIP	N	12/2021
WF	NEW	Water Supply Capacity Analysis	CIP	N	6/2025
WWU	551-144	GIS Engineering Support (Amendment 3)	CONSENT DECREE	Y	6/2013
WWU	551-144	Future GIS Engineering Support	CONSENT DECREE	Y	Annual
WWU	551-144	GIS/Mapping	CONSENT DECREE	Y	12/2012
WWU	551-144	Future GIS/Mapping	CONSENT DECREE	Y	Annual
WWU	551-144	New Aerial Photography	CONSENT DECREE	Y	1/2014
WWU	551-233	SC 860 Repair & Replace Existing Sanitary	CIP/O&M	N	2/2013
WWU	551-404	Infiltration/Inflow Correction (Lining Projects)	CIP/O&M	N	12/2013
WWU	551-410	Improvements to Herring Run Interceptor PAS	CIP	N	2/2013
WWU	551-410	Improvements to Herring Run Interceptor Construction	CIP	N	2/2013
WWU	551-569	Urgent Need Sanitary Design Services	CONSENT DECREE/ O&M	Y	9/2013
WWU	551-569	Urgent Need Sanitary Design Services	CONSENT DECREE/ O&M	Y	9/2013
WWU	551-569	Future Urgent Need Sanitary Design Services	CONSENT DECREE/ O&M	Y	9/2016
WWU	551-569	City-Wide Open Cut Improvements for CD Design	CONSENT DECREE/ O&M	Y	7/2014
WWU	551-569	City-Wide Open Cut Improvements for CD Construction	CONSENT DECREE/ O&M	Y	1/2014
WWU	551-569	City-Wide Lining & SSES for CD Design	CONSENT DECREE/ O&M	Y	1/2014
WWU	551-569	City-Wide Lining & SSES for CD Construction	CONSENT DECREE/ O&M	Y	1/2014
WWU	551-609	SW Diversion Pressure Sewer Imp. PAS	CIP	N	2/2014
WWU	551-609	SW Diversion Pressure Sewer Imp. Construction	CIP	N	2/2013
WWU	551-609	SW Diversion Pressure Sewer Imp. PAS	CIP	N	1/2014
WWU	551-609	SW Diversion Pressure Sewer Imp. Construction	CIP	N	1/2014
WWU	551-609	SW Diversion Pressure Sewer Imp. PAS	CIP	N	3/2014
WWU	551-609	SW Diversion Pressure Sewer Imp. Construction	CIP	N	3/2014
WWU	551-611	Low Level Sewershed Design	CONSENT DECREE	Y	2/2013
WWU	551-611	Low Level Sewershed Construction	CONSENT DECREE	Y	5/2015
WWU	551-611	Low Level Sewershed Design	CONSENT DECREE	Y	1/2013
WWU	551-611	Low Level Sewershed Construction	CONSENT DECREE	Y	3/2015
WWU	551-611	Low Level Sewershed Design	CONSENT DECREE	Y	11/2013
WWU	551-611	Low Level Sewershed Construction	CONSENT DECREE	Y	1/2016
WWU	551-611	LL Sewershed Improvements for 5-Year Storm Design	CONSENT DECREE	Y	3/2017
WWU	551-611	LL Sewershed Improvements for 5-Year Storm Construction	CONSENT DECREE	Y	5/2019
WWU	551-612	Outfall Sewershed Design	CONSENT DECREE	Y	6/2012
WWU	551-612	Outfall Sewershed Construction	CONSENT DECREE	Y	9/2014
WWU	551-612	Outfall Sewershed Interceptor Cleaning Design	CONSENT DECREE	Y	8/2012
WWU	551-612	Outfall Sewershed Interceptor Cleaning Construction	CONSENT DECREE	Y	8/2012
WWU	551-612	Outfall Sewershed Improvements for 5-Year Storm Design	CONSENT DECREE	Y	3/2018
WWU	551-612	Outfall Sewershed Improvements for 5-Year Storm Construction	CONSENT DECREE	Y	6/2020
WWU	551-614	Dundalk Sewershed Design	CONSENT DECREE	Y	5/2013
WWU	551-614	Dundalk Sewershed Construction	CONSENT DECREE	Y	7/2015

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WWU	551-614	Dundalk Sewershed Improvements for 5-Year Storm Design	CONSENT DECREE	Y	2/2018
WWU	551-614	Dundalk Sewershed Improvements for 5-Year Storm Construction	CONSENT DECREE	Y	5/2019
WWU	551-616	Patapsco Sewershed Design	CONSENT DECREE	Y	5/2013
WWU	551-616	Patapsco Sewershed Construction	CONSENT DECREE	Y	7/2015
WWU	551-616	Patapsco Sewershed Improvements for 5-Year Storm Design	CONSENT DECREE	Y	2/2017
WWU	551-616	Patapsco Sewershed Improvements for 5-Year Storm Construction	CONSENT DECREE	Y	5/2019
WWU	551-620	Upper Gwynns Run Interceptor Improvements Design	CONSENT DECREE	Y	10/2012
WWU	551-620	Upper Gwynns Run Interceptor Improvements Construction	CONSENT DECREE	Y	11/2014
WWU	551-620	Liberty Heights Relief Sewer Design	CONSENT DECREE	Y	5/2013
WWU	551-620	Liberty Heights Relief Sewer Construction	CONSENT DECREE	Y	7/2015
WWU	551-620	West Baltimore SS Improvements Design	CONSENT DECREE	Y	10/2012
WWU	551-620	West Baltimore SS Improvements Construction	CONSENT DECREE	Y	11/2014
WWU	551-620	West Baltimore Micro-Tunnel Extension Design	CONSENT DECREE	Y	10/2012
WWU	551-620	West Baltimore Micro-Tunnel Extension Construction	CONSENT DECREE	Y	11/2014
WWU	551-620	East HL SS Improvements Design	CONSENT DECREE	Y	10/2012
WWU	551-620	East HL SS Improvements Construction	CONSENT DECREE	Y	11/2014
WWU	551-620	High LevelSewershed Improvements for 5-Year Storm Design	CONSENT DECREE	Y	2/2017
WWU	551-620	High Level Sewershed Improvements for 5-Year Storm Construction	CONSENT DECREE	Y	5/2019
WWU	551-622	Gwynns Falls Sewershed Design	CONSENT DECREE	Y	5/2013
WWU	551-622	Gwynns Falls Sewershed Construction	CONSENT DECREE	Y	7/2015
WWU	551-622	Gwynns Falls Sewershed Design	CONSENT DECREE	Y	5/2013
WWU	551-622	Gwynns Falls Sewershed Construction	CONSENT DECREE	Y	7/2013
WWU	551-622	Gwynns FallsSewershed Improvements for 5-Year Storm Design	CONSENT DECREE	Y	2/2017
WWU	551-622	Gwynns FallsSewershed Improvements for 5-Year Storm Construction	CONSENT DECREE	Y	5/2019
WWU	551-624	Herring Run Sewershed Design	CONSENT DECREE	Y	8/2012
WWU	551-624	Herring Run Sewershed Construction	CONSENT DECREE	Y	11/2014
WWU	551-624	Herring Run Sewershed Design	CONSENT DECREE	Y	10/2012
WWU	551-624	Herring Run Sewershed Construction	CONSENT DECREE	Y	1/2015
WWU	551-624	Herring Run Sewershed Design	CONSENT DECREE	Y	8/2012
WWU	551-624	Herring Run Sewershed Construction	CONSENT DECREE	Y	11/2014
WWU	551-624	Herring Run Sewershed Design	CONSENT DECREE	Y	10/2012
WWU	551-624	Herring Run Sewershed Construction	CONSENT DECREE	Y	12/2014
WWU	551-624	Herring Run Sewershed Improvements for 5-Year Storm Design	CONSENT DECREE	Y	3/2017
WWU	551-624	Herring Run Sewershed Improvements for 5-Year Storm Construction	CONSENT DECREE	Y	5/2019
WWU	551-626	JF MD Ave Sub-Sewershed Design	CONSENT DECREE	Y	4/2012
WWU	551-626	JF MD Ave Sub-Sewershed Construction	CONSENT DECREE	Y	2/2013
WWU	551-626	JF MD Ave Sub-Sewershed Construction	CONSENT DECREE	Y	10/2014
WWU	551-626	JF Sewershed Greenmount Construction	CONSENT DECREE	Y	7/2014
WWU	551-626	Jones Falls Sewershed Construction	CONSENT DECREE	Y	1/2016
WWU	551-626	JF Sewershed Western Area Construction	CONSENT DECREE	Y	1/2015
WWU	551-626	Jones Falls Sewershed Improvements for 5-Year Storm Design	CONSENT DECREE	Y	2/2017
WWU	551-626	Jones Falls Sewershed Improvements for 5-Year Storm Construction	CONSENT DECREE	Y	4/2019
WWU	551-627	Wet Weather Program O&M	CONSENT DECREE	Y	9/2014
WWU	551-627	Wet Weather Program Construction	CONSENT DECREE	Y	3/2014
WWU	551-627	Wet Weather Flow Monitoring for PCM	CONSENT DECREE	Y	1/2015
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	O&M	N	12/2017
WWF	551-526	BR Digester Renovations PAS	EPA/O&M	Y	5/2015

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WWF	551-526	BR Digester Renovations Construction	EPA/O&M	Y	5/2015
WWF	551-528	Patapsco ENR Denitrification - Design (PAS)	NPDES	Y	2/2014
WWF	551-528	Patapsco ENR Denitrification -Construction	NPDES	Y	4/2013
WWF	551-528	Patpasco ENR Misc Modifications PAS	NPDES	Y	3/2013
WWF	551-528	Patpasco ENR Misc Modifications Construction	NPDES	Y	3/2013
WWF	551-528	Patapsco ENR Nitrification - Design (PAS)	NPDES	Y	11/2014
WWF	551-528	Patapsco ENR Nitrification -Construction	NPDES	Y	11/2013
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations Design	CIP	N	11/2011
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations PAS	CIP	N	7/2013
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations Construction	CIP	N	7/2013
WWF	551-533	Annual Facilities Improvements	CIP	N	12/2018
WWF	551-533	BR Admin Bldg. Exterior PAS	NPDES	Y	1/2013
WWF	551-533	BR Admin Bldg. Construction	NPDES	Y	1/2013
WWF	551-533	BR Maint Bldg Roof Repair PAS	NPDES	Y	5/2012
WWF	551-533	BR Maint Bldg Roof Repair Construction	NPDES	Y	5/2012
WWF	551-533	BR Chlor Bldg Concrete Design	NPDES	Y	12/2012
WWF	551-533	BR Chlor Bldg Concrete PAS	NPDES	Y	12/2013
WWF	551-533	BR Chlor Bldg Concrete Construction	NPDES	Y	12/2013
WWF	551-533	BR Odor Control Scrubber Study (On-Call Task)	NPDES	Y	11/2011
WWF	551-533	BR Odor Control Scrubber Design (If needed)	NPDES	Y	9/2012
WWF	551-533	BR Odor Control Scrubber PAS (if needed)	NPDES	Y	10/2013
WWF	551-533	BR Odor Control Scrubber Study Construction (if needed)	NPDES	Y	10/2013
WWF	551-533	BR Influent Facilities Short-Term Bypass Design	NPDES	Y	4/2013
WWF	551-533	BR Influent Facilities Short-Term Bypass PAS	NPDES	Y	10/2014
WWF	551-533	BR Influent Facilities Short-Term Bypass Construction	NPDES	Y	10/2014
WWF	551-533	BR PST #11, Grit Tank 3 Center Drive Replacement Design (On-Call Task)	NPDES	Y	7/2012
WWF	551-533	BR PST #11, Grit Tank 3 Center Drive Replacement PAS	NPDES	Y	4/2014
WWF	551-533	BR PST #11, Grit Tank 3 Center Drive Replacement Construction	NPDES	Y	4/2014
WWF	551-533	Plant-Wide Telephone Systems at Back River Design	NPDES	Y	1/2013
WWF	551-533	Plant-Wide Telephone Systems at Back River PAS	NPDES	Y	1/2014
WWF	551-533	Plant-Wide Telephone Systems at Back River Construction	NPDES	Y	1/2014
WWF	551-533	Pat Sludge Blending Tanks PAS	NPDES	Y	7/2013
WWF	551-533	Pat Sludge Blending Tanks Construction	NPDES	Y	7/2013
WWF	551-533	Pat OH Tank Painting & Rehab PAS	NPDES	Y	9/2012
WWF	551-533	Pat OH Tank Painting & Rehab Construction	NPDES	Y	9/2012
WWF	551-533	Pat Chlor Bldg Concrete Design	NPDES	Y	12/2012
WWF	551-533	Pat Chlor Bldg Concrete PAS	NPDES	Y	11/2013
WWF	551-533	Pat Chlor Bldg Concrete Construction	NPDES	Y	11/2013
WWF	551-533	Pat Residual Transfer Station Design	NPDES	Y	9/2012
WWF	551-533	Pat Residual Transfer Station PAS	NPDES	Y	1/2014
WWF	551-533	Pat Residual Transfer Station Construction	NPDES	Y	1/2014
WWF	551-533	Patapsco Admin Bldg Lobby Renovation Design	NPDES	Y	4/2014
WWF	551-533	Patapsco Admin Bldg Lobby Renovation PAS	NPDES	Y	4/2016
WWF	551-533	Patapsco Admin Bldg Lobby Renovation Construction	NPDES	Y	4/2016
WWF	551-533	Patapsco Headworks Improvements Design	NPDES	Y	4/2013
WWF	551-533	Patapsco Headworks Improvements PAS	NPDES	Y	4/2015
WWF	551-533	Patapsco Headworks Improvements Construction	NPDES	Y	4/2015

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WWF	551-533	Patapsco Roof Replacements Design	NPDES	Y	8/2012
WWF	551-533	Patapsco Roof Replacements PAS	NPDES	Y	10/2013
WWF	551-533	Patapsco Roof Replacements Construction	NPDES	Y	10/2013
WWF	551-533	Patapsco Storeroom Modernization Design	NPDES	Y	4/2014
WWF	551-533	Patapsco Storeroom Modernization PAS	NPDES	Y	10/2015
WWF	551-533	Patapsco Storeroom Modernization Construction	NPDES	Y	10/2015
WWF	551-533	Plant-Wide Telephone Systems at Patapsco Design	NPDES	Y	1/2014
WWF	551-533	Plant-Wide Telephone Systems at Patapsco PAS	NPDES	Y	1/2015
WWF	551-533	Plant-Wide Telephone Systems at Patapsco Construction	NPDES	Y	1/2015
WWF	551-533	Patapsco Incinerator Area Cleanup Design	NPDES	Y	10/2015
WWF	551-533	Patapsco Incinerator Area Cleanup PAS	NPDES	Y	4/2018
WWF	551-533	Patapsco Incinerator Area Cleanup Construction	NPDES	Y	4/2018
WWF	551-557	BR ENR De-Nitrification Design	NPDES	Y	8/2012
WWF	551-557	BR ENR De-Nitrification PAS	NPDES	Y	3/2016
WWF	551-557	BR ENR De-Nitrification Construction	NPDES	Y	3/2016
WWF	551-557	BR ENR Activated Plant 4 Design	NPDES	Y	6/2013
WWF	551-557	BR ENR Activated Plant 4 PAS	NPDES	Y	12/2016
WWF	551-557	BR ENR Activated Plant 4 Construction	NPDES	Y	12/2016
WWF	551-557	Effluent Filter Rehabilitation at Back River WWTP Design	NPDES	Y	1/2018
WWF	551-557	Effluent Filter Rehabilitation at Back River WWTP PAS	NPDES	Y	7/2020
WWF	551-557	Effluent Filter Rehabilitation at Back River WWTP Construction	NPDES	Y	7/2020
WWF	551-561	BR Primary Settling Tanks PAS	NPDES	Y	12/2013
WWF	551-561	BR Primary Settling Tanks Construction	NPDES	Y	12/2013
WWF	551-585	Pat LOX Plant Upgrade Design	NPDES	Y	4/2012
WWF	551-585	Pat LOX Plant Upgrade PAS	NPDES	Y	12/2013
WWF	551-585	Pat LOX Plant Upgrade Construction	NPDES	Y	12/2013
WWF	551-681	WW Facilities Security Improvements	DHS	Y	7/2017
WWF	551-685	BR Scum & Grease System PAS	CIP	N	1/2014
WWF	551-685	BR Scum & Grease System Construction	CIP	N	9/2013
WWF	551-687	Patapsco Chlorine Conversion PAS	DHS	Y	8/2013
WWF	551-687	Patapsco Chlorine Conversion Construction	DHS	Y	8/2013
WWF	551-689	BR Headworks Improvement Study, Preliminary Design	CONSENT DECREE	Y	1/2013
WWF	551-689	BR Headworks Improvement Design	CONSENT DECREE	Y	7/2014
WWF	551-689	BR Headworks Improvement PAS	CONSENT DECREE	Y	1/2017
WWF	551-689	BR Headworks Improvement Construction	CONSENT DECREE	Y	1/2017
WWF	551-692	BR Arc Flash Improvements Design (Proj 1160 Task)	NPDES, Reliability & Safety	Y	12/2012
WWF	551-692	BR Arc Flash Improvements PAS	NPDES, Reliability & Safety	Y	11/2014
WWF	551-692	BR Arc Flash Improvements Construction	NPDES, Reliability & Safety	Y	11/2014
WWF	551-692	BR Power Reliability Improvements Design	NPDES, Reliability & Safety	Y	4/2013
WWF	551-692	BR Power Reliability Improvements PAS	NPDES, Reliability & Safety	Y	9/2014
WWF	551-692	BR Power Reliability Improvements Construction	NPDES, Reliability & Safety	Y	9/2014
WWF	551-692	BR Power Distribution Physical Security Upgrades Design	NPDES, Reliability & Safety	Y	4/2013
WWF	551-692	BR Power Distribution Physical Security Upgrades PAS	NPDES, Reliability & Safety	Y	9/2014
WWF	551-692	BR Power Distribution Physical Security Upgrades Construction	NPDES, Reliability & Safety	Y	9/2014
WWF	551-692	BR Local Standby Power Generation Design	NPDES, Reliability & Safety	Y	4/2013
WWF	551-692	BR Local Standby Power Generation PAS	NPDES, Reliability & Safety	Y	9/2014
WWF	551-692	BR Local Standby Power Generation Construction	NPDES, Reliability & Safety	Y	9/2014

Project Type	CIP Number	Project Name	Project Origin	Regulatory (Y or N)	Project Deadline
WWF	551-692	Pat Arc Flash Improvements Design (Proj 1160 Task)	NPDES, Reliability & Safety	Y	12/2012
WWF	551-692	Pat Arc Flash Improvements PAS	NPDES, Reliability & Safety	Y	11/2014
WWF	551-692	Pat Arc Flash Improvements Construction	NPDES, Reliability & Safety	Y	11/2014
WWF	551-692	Pat Power Reliability Improvements Design	NPDES, Reliability & Safety	Y	4/2013
WWF	551-692	Pat Power Reliability Improvements PAS	NPDES, Reliability & Safety	Y	9/2014
WWF	551-692	Pat Power Reliability Improvements Construction	NPDES, Reliability & Safety	Y	9/2014
WWF	551-692	Pat Power Distribution Physical Security Upgrades Design	NPDES, Reliability & Safety	Y	4/2013
WWF	551-692	Pat Power Distribution Physical Security Upgrades PAS	NPDES, Reliability & Safety	Y	9/2014
WWF	551-692	Pat Power Distribution Physical Security Upgrades Construction	NPDES, Reliability & Safety	Y	9/2014
WWF	551-692	Pat Local Standby Power Generation Design	NPDES, Reliability & Safety	Y	4/2014
WWF	551-692	Pat Local Standby Power Generation PAS	NPDES, Reliability & Safety	Y	9/2015
WWF	551-692	Pat Local Standby Power Generation Construction	NPDES, Reliability & Safety	Y	9/2015
WWF	551-692	Pat Arc Flash Identification at WW Pumping Statiopns (Proj 1160 Task)	NPDES, Reliability & Safety	Y	1/2013
WWF	551-692	Pat Arc Flash Improvements at Various WW Pumping Stations PAS	NPDES, Reliability & Safety	Y	7/2014
WWF	551-692	Pat Arc Flash Improvements at Various WW Pumping Stations Construction	NPDES, Reliability & Safety	Y	7/2014
WWF	551-752	McComas Street PS/FM Upgrade Design (PAS)	CIP	N	9/2013
WWF	551-752	McComas Street PS/FM Upgrade Construction	CIP	N	8/2013
WWF	551-754	Quad Ave FM Replacement Design	CIP	N	5/2012
WWF	551-754	Quad Ave FM Replacement PAS	CIP	N	6/2013
WWF	551-754	Quad Ave FM Replacement Construction	CIP	N	6/2013
WWF	551-755	Dundalk WWPS, FM Design	CIP	N	5/2012
WWF	551-755	Dundalk WWPS, FM PAS	CIP	N	7/2013
WWF	551-755	Dundalk WWPS, FM Construction	CIP	N	7/2013
WWF	551-503: On Call	Design Engineering Project Management Services	CIP	N	2/2016
WWF	551-503: On Call	On-Call Mechanical Engineering Services	CIP	N	9/2014
WWF	551-503: On Call	On-Call Mechanical Engineering Services	CIP	N	2/2015
WWF	551-503: On Call	On-Call Structural Engineering Services	CIP	N	2/2013
WWF	551-503: On Call	On-Call Structural Engineering Services	CIP	N	2/2017
WWF	551-503: On Call	On-Call Structural Engineering Services	CIP	N	2/2013
WWF	551-503: On Call	On-Call Structural Engineering Services	CIP	N	2/2017
WWF	551-503: On Call	On-Call Process Control and SCADA	CIP	N	7/2013
WWF	551-503: On Call	On-Call Process Control and SCADA	CIP	N	7/2017
WWF	551-503: On Call	On-Call Environmental Services & Hazardous Waste Handling	CIP	N	5/2014
WWF	551-503: On Call	On-Call Environmental Services & Hazardous Waste Handling	CIP	N	5/2017
WWF	551-503: On Call	On-Call Environmental Services & Hazardous Waste Handling	CIP	N	5/2014
WWF	551-503: On Call	On-Call Environmental Services & Hazardous Waste Handling	CIP	N	5/2017
WWF	551-503: On Call	On-Call Electrical Engineering Services	CIP	N	7/2015
WWF	551-503: On Call	Future On-Call Electrical Engineering Services	CIP	N	Annual
WWF	NEW	Optimization of Inventory Control	CIP	N	3/2022
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	CIP	N	9/2020
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	CIP	N	12/2022
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	O&M	N	3/2024

Table A.2, Baltimore Integrated Planning Bundled Project List

Project Type	CIP Number	Project	Total Cost ($M)	City Share of Costs ($M)	Planned FY Project Start	Planned FY Project Complete
SWU	520-102	Small Storm Drain and Inlet Repair	$22.2	$22.2	2013	2024
SWU	520-093	Race Street Box Culvert	$3.5	$3.5	2013	2013
SWU	520-715	Northeast Baltimore Drainage Improvements	$3.2	$3.2	2014	2016
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	$0.4	$0.4	2012	2014
SWU	520-708	Storm Water Pumping Station Improvements Highland Town	$1.6	$1.6	2013	2013
SWU	520-451	Fairmount Storm Drain Improvements	$1.9	$1.9	2013	2014
SWU	520-NEW	Patapsco Avenue Drainage Improvement	$4.5	$4.5	2012	2016
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	$4.0	$4.0	2013	2016
SWU	520-NEW	North Point Road Drainage Improvement	$4.5	$4.5	2013	2015
SWU	520-NEW	2300 Block Seamon Ave	$0.3	$0.3	2013	2014
SWU	520-NEW	Harris Creek Storm Drainage	$4.9	$4.9	2014	2020
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	$1.2	$1.2	2012	2015
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	$3.1	$3.1	2013	2016
SWF	525-405	ER4018 Powder Mill Run	$1.5	$1.5	2014	2015
SWF	525-449	ER4016 Bush Street Debris Collector	$3.1	$3.1	2012	2014
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	$1.2	$1.2	2015	2016
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	$3.5	$3.5	2013	2016
SWF	525-NEW	Stony Run Environmental Restoration Projects	$4.0	$4.0	2013	2016
SWF	525-NEW	Moores Run Environmental Restoration Projects	$5.2	$5.2	2012	2017
SWF	525-NEW	Stream Restoration TBD	$5.3	$5.3	2013	2017
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	$0.7	$0.7	2013	2015
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	$2.3	$2.3	2013	2018
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	$1.7	$1.7	2015	2019
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	$1.2	$1.2	2016	2019
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	$6.7	$6.7	2013	2017
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	$1.7	$1.7	2015	2017
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	$3.4	$3.4	2015	2017
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	$3.4	$3.4	2015	2018
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	$3.4	$3.4	2013	2016
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	$1.3	$1.3	2014	2017
SWF	525-NEW	Facility Greening Projects Jones Falls WS	$1.7	$1.7	2015	2017
SWF	525-NEW	Facility Greening Projects Back River WS	$1.7	$1.7	2016	2018
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	$0.4	$0.4	2013	2014
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	$0.4	$0.4	2013	2014
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	$0.4	$0.4	2013	2016
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	$0.9	$0.9	2014	2017

Project Type	CIP Number	Project	Total Cost ($M)	City Share of Costs ($M)	Planned FY Project Start	Planned FY Project Complete
WU	557-002	Water Utility Billing System	$25.0	$12.5	2014	2018
WU	557-031	Water Distribution System - Improvements	$18.7	$13.5	2011	2015
WU	557-099	GIS Support and Improvements	$7.2	$6.4	2007	2019
WU	557-100	Water Infrastructure Rehabilitation	$329.3	$329.3	2012	2016
WU	557-101	Water Mains - Installation	$10.1	$10.1	2012	2015
WU	557-130	Water System Cathodic Protection	$5.0	$5.0	2010	2014
WU	557-133	Meter Replacement Program	$176.6	$96.0	2012	2014
WU	557-400	Valve and Hydrant Exercising - Annual	$0.7	$0.7	2012	2014
WU	557-638	Water Audit	$19.1	$9.6	2011	2014
WU	557-689	Urgent Needs Water Engineering Services	$7.9	$4.7	2010	2015
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	$36.8	$22.9	2013	2017
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	$21.3	$21.3	2012	2014
WU	NEW	Large Valve Replacement	$6.2	$2.9	2009	2014
WU	NEW	SCADA Upgrades	$5.3	$5.3	2013	2019
WU	NEW	Water modeling	$17.2	$17.2	2013	2019
WU	NEW	Leak Detection & Rehab – Large mains	$1.5	$1.5	2013	2019
WU	557-687	Large Main Rehab & Replacement, PCCP	$0.2	$0.2	2013	2019
WF	557-068	Loch Raven - Roads & Culvert repair	$6.6	$4.0	2010	2013
WF	557-068	Pretty Boy Reservoir - Roads & Culvert repair	$11.2	$6.7	2012	2014
WF	557-068	Liberty Reservoir - Roads & Culvert repair	$5.5	$3.3	2013	2015
WF	557-070	Watershed Bridge Repair	$44.1	$26.4	2012	2018
WF	557-158	Earthen Dam Improvement Program WC-1127	$6.2	$3.7	2012	2016
WF	557-300	Urgent Needs Water Facilities - Annual Improvements	$36.2	$21.7	2012	2020
WF	557-312	Montebello WTP 1 & 2 Improvements	$130.3	$78.2	2011	2024
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	$11.4	$6.8	2012	2016
WF	557-696	Chlorine Handling Safety Improvements WC-1150	$49.9	$29.9	2013	2019
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	$14.5	$8.7	2010	2014
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	$35.8	$13.6	2011	2017
WF	557-713	Finished Water Improvements - Towson FW Reservoir	$9.0	$3.5	2011	2014
WF	557-715	UV disinfection - Ashburton FW Reservoir	$37.7	$22.6	2011	2019
WF	557-716	UV disinfection - Druid Lake FW Reservoir	$42.5	$25.1	2011	2019
WF	557-727	Deer Creek Pumping Station Improvements	$11.5	$6.5	2011	2014
WF	557-730	Fullerton Water Filtration Plant WC 1169	$607.5	$182.3	2012	2021
WF	557-731	Montebello Water Recycle Program	$32.6	$18.6	2008	2016
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	$11.8	$7.1	2013	2017
WF	557-921	Maint Bldg. Impr. At Liberty Dam WC 1207	$22.9	$13.7	2011	2017
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	$18.0	$7.0	2012	2018
WF	557-922	Vernon Pump Station Rehabilitation	$18.3	$11.1	2013	2017
WF	557-923	Cromwell Pump Station Rehabilitation	$18.3	$7.1	2013	2017
WF	557-924	Pikesville Pump Station Rehabilitation	$11.6	$0.0	2013	2018

Project Type	CIP Number	Project	Total Cost ($M)	City Share of Costs ($M)	Planned FY Project Start	Planned FY Project Complete
WF	557-926	Towson Pump Station Rehabilitation	$10.0	$0.1	2014	2019
WF	557-928	Ashburton Pump Station Rehabilitation	$34.2	$18.1	2012	2018
WF	557-927	Ashburton Chemical Laboratory	$6.1	$2.4	2019	2023
WF	557-928	Urgent needs - Water Facilities Engineering	$1.5	$0.8	2013	2015
WF	557-573	Raw water Tunnel Inspections	$0.5	$0.5	2015	2017
WF	NEW	Water Recycling and Solids Handling - Ashburton	$9.6	$9.6	2017	2024
WF	NEW	Inspection/Maintenance of PS'S	$138.7	$138.7	2019	2024
WF	NEW	Personnel training in Electrical and Instrumentation certification.	$0.3	$0.3	2014	2019
WF	NEW	Staffing Needs	$0.5	$0.5	2014	2019
WF	NEW	Preventive Maintenace Program	$3.0	$3.0	2014	2019
WF	NEW	Montebello Washwater Lake Dredging & Remediation	$13.1	$13.1	2013	2016
WF	NEW	Hydropower Study	$12.1	$12.1	2016	2023
WF	NEW	Baltimore City Water Bottling - Feasibility Study	$12.1	$12.1	2016	2022
WF	NEW	Water Supply Capacity Analysis	$96.3	$96.3	2017	2025
WWU	551-144	GIS Updates & Mapping Program	$6.3	$6.3	2012	2014
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	$3.9	$3.9	2012	2014
WWU	551-410	Herring Run Interceptor improvements	$6.1	$3.8	2012	2013
WWU	551-569	Urgent Need Sanitary Design Services	$21.6	$21.6	2011	2017
WWU	551-609	SW Diversion Pressure Sewer Improvements	$49.4	$13.5	2011	2014
WWU	551-611	Low Level Sewershed Improvements	$84.3	$83.2	2011	2019
WWU	551-612	Outfall Sewershed Improvements	$190.6	$109.1	2011	2021
WWU	551-614	Dundalk Sewershed Improvements	$13.6	$7.1	2012	2019
WWU	551-616	Patapsco Sewershed Improvements	$26.1	$20.8	2012	2019
WWU	551-620	High LevelSewershed Improvements	$59.8	$59.8	2011	2019
WWU	551-622	Gwynns FallsSewershed Improvements	$216.9	$77.1	2012	2019
WWU	551-624	Herring Run Sewershed Improvements	$236.4	$180.4	2011	2019
WWU	551-626	Jones Falls Sewershed Improvements	$117.5	$85.0	2010	2019
WWU	551-627	Wet Weather Program Operation and Management	$15.3	$8.7	2012	2015
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	$27.5	$27.5	2013	2018
WWF	551-526	Back River Digester Renovation SC-8526	$49.4	$24.7	2012	2015
WWF	551-528	Patapsco ENR Denitrification and Nitrification	$129.3	$11.7	2010	2015
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	$0.8	$0.4	2016	2018
WWF	551-533	Annual Facilities Improvements	$9.0	$4.5	2011	2014
WWF	551-533	Back River Facilities Improvements	$6.8	$3.4	2011	2015
WWF	551-533	Patapsco Facilities Improvements	$17.7	$5.7	2012	2018
WWF	551-557	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	$443.8	$58.4	2011	2021
WWF	551-561	Back River Settling Tanks	$4.4	$2.2	2010	2014
WWF	551-585	Pat LOX Plant Upgrade SC-868	$4.3	$1.4	2011	2014
WWF	551-681	WW Facilities Security Improvements	$2.0	$1.0	2015	2019
WWF	551-685	Back River Scum & Grease System	$5.5	$2.8	2012	2014

Project Type	CIP Number	Project	Total Cost ($M)	City Share of Costs ($M)	Planned FY Project Start	Planned FY Project Complete
WWF	551-687	Patapsco Chlorine Conversion SC-857	$4.3	$1.4	2013	2014
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	$112.4	$56.2	2012	2017
WWF	551-692	Back River Electrical System Upgrade	$34.8	$17.4	2012	2015
WWF	551-692	Patapsco Electrical System Upgrade	$43.9	$21.9	2012	2016
WWF	551-752	McComas Street PS/FM Upgrade	$1.6	$1.6	2013	2014
WWF	551-755	Pump Station Force Main Improvements, various locations	$13.5	$9.6	2011	2014
WWF	551-503: On Call	On-Call Engineering Services	$11.3	$11.3	2009	2018
WWF	NEW	Optimization of Inventory Control	$2.3	$2.3	2017	2022
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	$1.2	$1.2	2016	2021
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	$2.4	$2.4	2017	2023
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	$83.3	$83.3	2017	2024
SWU	NEW	Conveyance	$265.2	$265.2	2019	2024
SWF	NEW	Outfalls	$148.8	$148.8	2019	2024
WU	NEW	Pipelines/Distribution System	$534.0	$534.0	2019	2024
WF	NEW	Montebello 1 Membrane Filteration $60M	$61.8	$61.8	2019	2024
WF	557-300	Montebello Generator $15M	$15.2	$9.1	2019	2024
WF	NEW	Montebello Chemical Systems Upgrade $35M	$38.6	$23.1	2019	2024
WF	NEW	Montebello Preliminary/Settling Upgrade $35M	$39.5	$23.7	2019	2024
WF	NEW	Ashburton Recycle Facilities $30M	$34.7	$34.7	2019	2024
WF	NEW	Ashburton Generator $10M	$10.8	$10.8	2019	2024
WF	NEW	Ashburton Preliminary/Settling Upgrade $25M	$29.2	$29.2	2019	2024
WF	NEW	Pumping Stations	$64.7	$64.7	2019	2024
WF	NEW	Reservoirs & Tanks	$32.3	$32.3	2019	2024
WWU	NEW	Collection System	$96.6	$96.6	2019	2024
WWF	NEW	Patapsco Secondary Treatment Upgrades $50M	$56.6	$18.1	2019	2024
WWF	NEW	Patapsco Sludge Digestion Facilities $50M	$46.8	$15.0	2019	2024
WWF	NEW	Patapsco Green Energy $15M	$15.9	$5.1	2019	2024
WWF	NEW	Patapsco Hypochlorite Generation Facility $25M	$25.9	$8.3	2019	2024
WWF	NEW	Patapsco Pelletization Facility Upgrade $40M	$42.0	$13.4	2019	2024
WWF	NEW	Patapsco Chemical Facilities Upgrade $10M	$11.4	$3.7	2019	2024
WWF	NEW	Back River Secondary Treatment Upgrades $75M	$87.5	$43.7	2019	2024
WWF	NEW	Back River Egg-Shaped Digester Additions $75M	$87.5	$43.7	2019	2024
WWF	NEW	Back River Sludge Storage Facility $25M	$26.5	$13.3	2019	2024
WWF	NEW	Back River Pelletization Faciltiy Upgrade $60M	$63.5	$31.8	2019	2024
WWF	NEW	Back River Hypochlorite Generation Facility $30M	$31.1	$15.5	2019	2024
WWF	NEW	Back River Green Energy $15M	$15.9	$8.0	2019	2024
WWF	NEW	Pumping Stations & Force Mains	$97.0	$97.0	2019	2024

Table A.3, Projects Currently Underway

Project Type	CIP Number	Project	Total Cost ($M)	City Share of Costs ($M)	Planned FY Project Start	Planned FY Project Complete
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	$14.5	$8.7	2010	2014
WF	557-713	Finished Water Improvements - Towson FW Reservoir	$9.0	$3.5	2011	2014
WF	557-727	Deer Creek Pumping Station Improvements	$11.5	$6.5	2011	2014
WWF	551-526	Back River Digester Renovation SC-8526	$49.4	$24.7	2012	2015
WWF	551-528	Patapsco ENR Denitrification and Nitrification	$129.3	$11.7	2010	2015
WWF	551-533	Annual Facilities Improvements	$9.0	$4.5	2011	2014
WWF	551-561	Back River Settling Tanks	$4.4	$2.2	2010	2014
WWF	551-685	Back River Scum & Grease System	$5.5	$2.8	2012	2014
WWF	551-752	McComas Street PS/FM Upgrade	$1.6	$1.6	2013	2014

Table A.4, Projects Considered Critical for Utility Operation

Project Type	CIP Number	Project	Total Cost ($M)	City Share of Costs ($M)	Planned FY Project Start	Planned FY Project Complete
WU	557-002	Water Utility Billing System	$25.0	$12.5	2014	2018
WU	557-031	Water Distribution System - Improvements	$18.7	$13.5	2011	2015
WU	557-100	Water Infrastructure Rehabilitation	$329.3	$329.3	2012	2016
WU	557-101	Water Mains - Installation	$10.1	$10.1	2012	2015
WU	NEW	Leak Detection & Rehab – Large mains	$1.5	$1.5	2013	2019
WU	557-687	Large Main Rehab & Replacement, PCCP	$0.2	$0.2	2013	2019
WF	557-730	Fullerton Water Filtration Plant WC 1169	$607.5	$182.3	2012	2021
WWU	551-410	Herring Run Interceptor improvements	$6.1	$3.8	2012	2013

Table A.5, Recurrent Capital and O&M Projects

Project Type	CIP Number	Project	Total Cost ($M)	City Share of Costs ($M)	Planned FY Project Start	Planned FY Project Complete
WF	NEW	Inspection/Maintenance of PS'S	$138.7	$138.7	2019	2024
SWU	NEW	Conveyance	$265.2	$265.2	2019	2024
SWF	NEW	Outfalls	$148.8	$148.8	2019	2024
WU	NEW	Pipelines/Distribution System	$534.0	$534.0	2019	2024
WF	NEW	Montebello 1 Membrane Filteration $60M	$61.8	$61.8	2019	2024
WF	557-300	Montebello Generator $15M	$15.2	$9.1	2019	2024
WF	NEW	Montebello Chemical Systems Upgrade $35M	$38.6	$23.1	2019	2024
WF	NEW	Montebello Preliminary/Settling Upgrade $35M	$39.5	$23.7	2019	2024
WF	NEW	Ashburton Recycle Facilities $30M	$34.7	$34.7	2019	2024
WF	NEW	Ashburton Generator $10M	$10.8	$10.8	2019	2024
WF	NEW	Ashburton Preliminary/Settling Upgrade $25M	$29.2	$29.2	2019	2024

WF	NEW	Pumping Stations	$64.7	$64.7	2019	2024
WF	NEW	Reservoirs & Tanks	$32.3	$32.3	2019	2024
WWU	NEW	Collection System	$96.6	$96.6	2019	2024
WWF	NEW	Patapsco Secondary Treatment Upgrades $50M	$56.6	$18.1	2019	2024
WWF	NEW	Patapsco Sludge Digestion Facilities $50M	$46.8	$15.0	2019	2024
WWF	NEW	Patapsco Green Energy $15M	$15.9	$5.1	2019	2024
WWF	NEW	Patapsco Hypochlorite Generation Facility $25M	$25.9	$8.3	2019	2024
WWF	NEW	Patapsco Pelletization Facility Upgrade $40M	$42.0	$13.4	2019	2024
WWF	NEW	Patapsco Chemical Facilities Upgrade $10M	$11.4	$3.7	2019	2024
WWF	NEW	Back River Secondary Treatment Upgrades $75M	$87.5	$43.7	2019	2024
WWF	NEW	Back River Egg-Shaped Digester Additions $75M	$87.5	$43.7	2019	2024
WWF	NEW	Back River Sludge Storage Facility $25M	$26.5	$13.3	2019	2024
WWF	NEW	Back River Pelletization Faciltiy Upgrade $60M	$63.5	$31.8	2019	2024
WWF	NEW	Back River Hypochlorite Generation Facility $30M	$31.1	$15.5	2019	2024
WWF	NEW	Back River Green Energy $15M	$15.9	$8.0	2019	2024
WWF	NEW	Pumping Stations & Force Mains	$97.0	$97.0	2019	2024

APPENDIX B

BENEFIT CRITERIA SCORING PLANS

Appendix B, Benefit Criteria Scoring Plans

The Baltimore IPF model utilized two distinct types of scoring:

- Scale-based scores representing a scale from 0 to 10 with 0 being the least favorable and 10 being the most favorable.
- Data-based scores comprising actual data from each project.

Scale-Based Criteria Scoring

Scale-based scoring can be subjective. To minimize the amount of subjective judgment required, scoring definitions were developed for each score assignment. These definitions are listed in Table B.1 for those benefit criterion that received scale-based scores.

Table B.1, Scale-Based Scoring Plan Definitions

Raw Score	Scoring Plan Definition
ENVIRONMENTAL CRITERIA	
Criterion 6, Regulatory – Scored on whether or not the project had a regulatory driver	
0	Project does not address a regulatory issue
3	Project is part of proactive approach for permit compliance, but there is no schedule provided to the state or federal agency
6	Project is part of a permit implementation schedule, but not as a result of a regulatory inspection, violation or consent decree
10	Project addresses a violation or consent decree from the state or federal agency
Criterion 8, Drinking Water Conservation and Control – scored on whether or not the project contributes to, or enhances, the conservation or control of drinking water	
0	Project does not contribute to or enhance conservation or control of drinking water
5	Project contributes to or enables conservation or control of water in pipelines
10	Project contributes to or enables conservation or control of water at the end user
SOCIAL CRITERIA	
Criterion 9, Health and Safety – scored on whether or not the project reduces current, or potential, impacts to the following items: • *Traffic (6 lanes or more)* • *Traffic (with no easy alternative detour)* • *Traffic (with easy alternative detour)* • *City homes (basement flooding or water service disruption)* • *County customers* • *City businesses (access to business or water service disruption)* • *Streams or harbor (quantity and quality)* • *Other utilities* • *Hazard to human life, health or property*	
0	Impact none of the items
2.5	Impacts one item
5	Impacts two items
7.5	Impacts 3 items

10	Impacts 4 or more items
Criterion 10, Recreational Access – scored on whether or not the project provides recreational opportunities for the public in the following manner: • *Improves community aesthetics* • *Walking/running* • *Swimming* • *Biking* • *Picnics* • *Boating* • *Fishing*	
0	Impact none of the items
2.5	Impacts one item
5	Impacts two items
7.5	Impacts 3 items
10	Impacts 4 or more items
Criterion 11, Urban Tree Canopy – scored on whether or not the project contributes to the Chesapeake Bay Urban Tree Canopy Goals to restore 2,010 miles of forest buffers	
0	Does not contribute to the Urban Tree Canopy
10	Contributes to the Urban Tree Canopy
Criterion 12, Customer Satisfaction – scored on whether or not the project reduces the number of complaints, customer service requests (CSRs) or customer service disruptions (MCCs)	
0	Does not address complaints
5	Addresses 3 to 5 community complaints/CSRs/MCC inquiries within one year
10	Addresses 6 or more community complaints/CSRs/MCC inquiries within one year
Criterion 13, Drinking Water Quality – scored on whether or not the project delivers reductions in the following raw water, drinking water and delivery attributes to end users: • *Microorganisms* • *Disinfectants* • *Disinfection byproducts* • *Organic chemicals* • *Inorganic chemicals* • *Lead or copper* • *Taste, odor or color*	
0	Impact none of the items
2.5	Impacts one item
5	Impacts two items
7.5	Impacts 3 items
10	Impacts 4 or more items
Criterion 14, Lower Income or Blighted Areas – scored on whether or not the project benefits lower income or blighted neighborhoods	
0	No benefits to lower income or blighted neighborhoods
10	Benefits lower income or blighted neighborhoods

ECONOMIC CRITERIA	
Criterion 15, Alternative Funding – scored on whether or not the project has additional funding sources	
0	No alternative funding has been found
2.5	Project will be eligible to receive a favorable-terms loan such as the MDE State Revolving Fund
5	Project has been selected for a favorable-terms loan such as the MDE State Revolving Fund
7.5	Project is eligible, but not confirmed, for alternative funding such as grants, private partnerships or other department funding
10	Project has confirmed alternative funding such as grants, private partnerships or other department funding
Criterion 16, Annual O&M Costs – scored on the projected annual O&M costs, including avoided costs	
3	Slightly increased (< 20%) O&M costs from what would otherwise exist without the project
5	Neutral impact on O&M costs from what would otherwise exist without the project
6	Slightly decreased (< 20%) O&M costs from what would otherwise exist without the project
10	Significantly decreased (> 20%) O&M costs from what would otherwise exist without the project
PROJECT IMPLEMENTATION AND EFFICACY	
Criterion 19, Service Life/Condition – scored on whether or not the project address the condition of existing materials or systems	
0	Project includes replacement of parts/systems that are within 10 years of service life, but in good condition
2.5	Project includes replacement of parts/systems that are within 5 years of service life, but are in good condition
5	Project includes replacement of parts/systems that are past service life, but are in good condition
7.5	Project includes replacement of parts/systems that are past service life, but are in poor condition
10	Project includes replacement of parts/systems that are past service life and are failing
Criterion 20, Project Delay – scored on the predicted consequence of deferring the project at least one year, excluding regulatory impacts or fines, which are accounted for in the environmental criteria	
0	No impact with delay
3.3	Project may be delayed at least one year without appreciable impact
6.6	Some delay may be acceptable, although there may be some adverse cost impacts
10	Any delay will have an unacceptable impact
Criterion 21, Collaboration – scored on whether or not the project involves engagement with community groups, environmental groups or other non-governmental organizations (NGOs)	
0	Project has no collaboration
3.3	Project involves meetings for affected community awareness
6.6	Project involves engagement meetings with both the affected community and additional environmental groups
10	Project involves contributions of labor or funding from community, environmental or other NGO groups

Data-Based Criteria Scoring

Data-based soring was performed for the remainder of the benefit criteria. Data-based scoring used actual data to establish the range of data values, which were then converted into 0 to 10 scores. Table B.2 shows the starting data value for each score in the 10-point scale.

Table B.2, Data-Based Scoring Plan Data Ranges

Category and Evaluation Criteria Name	Water	Wastewater	Surface Water	0	1	2	3	4	5	6	7	8	9	10
Economic														
Pollutant Loading to Receiving Waters – Pathogens	N/A	Collection system hydraulic model	N/A	0	3.30323E+13	6.60647E+13	9.9097E+13	1.32129E+14	1.65162E+14	1.98194E+14	2.31226E+14	2.64259E+14	2.97291E+14	3.30323E+14
Pollutant Loading to Receiving Waters – Phosphorus	N/A	Collection system hydraulic model	BMP effectiveness ratio calculation (Appendix C)	0	137	274	411	549	686	823	960	1097	1234	1371
Pollutant Loading to Receiving Waters – Nitrogen	N/A	Collection system hydraulic model	MAST Model	0	144	287	431	575	719	862	1006	1150	1294	1437
Pollutant Loading to Receiving Waters – Sediment	N/A	Collection system hydraulic model	MAST Model	0	298769	597538	896307	1195076	1493845	1792614	2091383	2390152	2688921	2987690
Pollutant Loading to Receiving Waters – Trash [1]	N/A	N/A	USC research	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Habitat Preservation and Restorations	N/A	Linear feet of stream restoration times buffer width	Linear feet of stream restoration times buffer width	0	0.32	0.63	0.95	1.26	1.58	1.89	2.21	2.52	2.84	3.15
Economic														
Job Stimulus	Implan Model	Implan Model	Implan Model	0	50	342	633	925	1216	1508	1799	2091	2382	2674
Capital Costs	Dollars expended	Dollars expended	Dollars expended	$107,021,053	$95,463,158	$83,905,263	$72,347,368	$60,789,474	$49,231,579	$37,673,684	$26,115,789	$14,557,895	$ 3,000,000	$ -

[1] No ranges, scale-based scoring from MAST model Best Management Practices calculations as shown in Table C.3 in Appendix C.

Environmental Criteria Data Calculations

Of the six environmental criteria, five are based on reduction of pollutant loadings, including human pathogens, phosphorus, nitrogen, sediment and trash. The pollutant reduction benefits were measured in terms of annual pounds of pollutant removed for the project being scored. The sixth criterion, habitat preserved or restored, was measured on acres of habitat preserved or restored for the project being scored. The data calculations for various types of projects are summarized below.

Projects with pollutant reduction benefits were primarily wastewater and surface water projects. Within these project types, the City's CIP included a number of wastewater collection system improvement projects designed to fulfill the City's obligations under the existing Consent Decree with EPA and MDE, which focused on reducing pollutants entering the area's receiving waters.

To reduce SSOs within the collection system, the City developed a hydraulic model representing the collection system and is using the model, in part, to evaluate the level of SSO reduction for various capacity improvement alternatives. In addition, the City is completing a number of structural improvement projects to extend the useful life of the collection system assets and to reduce the amount of extraneous infiltration and inflow (I/I) entering the system and contributing to wet weather SSO events. Because the City's *Sewershed Plan Amendment* is underway and at this point the specific improvements to be recommended based on the continuous simulation level of protection analysis are not determined, this IPF analysis used the available 5-year or a 10-year synthetic design storm hydraulic model results. In future updates of the IPF analysis, the SSO reduction calculations will be revised to incorporate the level of protection results rather than the synthetic design storm results.

For those projects that are designed to reduce SSO events, the hydraulic model was used to predict the 5-year design project reduction and the 10-year design project reduction in annual SSO volume. Based on these overflow volume reductions, the amount of annual pollutant reduction was then calculated using event mean concentrations for the particular pollutant being evaluated by multiplying the model-predicted overflow reduction volume times the event mean concentration. The sources used to define each pollutant's event mean concentration are:

- Pathogens, phosphorus and sediment event concentrations: U.S. EPA, *Report to Congress Impacts and Control of CSOs and SSOs*, August 2004. (http://cfpub.epa.gov/npdes/cso/cpolicy_report2004.cfm)
- Nitrogen event concentrations: Milwaukee Metropolitan Sewerage District, *2020 Facility Planning Project*, Technical Memorandum – Point Source Loading Calculations for Purposes of Watercourse Modeling, January 29, 2007. (http://v3.mmsd.com/assetsclient/documents/wqi/2020Plan/2Loadings.pdf)

Additionally, two components of the bundled Wastewater Utility project, CIP Project 551-627, Wet Weather Program Operation and Management, are designed to significantly increase the O&M effort devoted to root control and grease control.

There are no known data directly correlating overflow volume reduction with increased O&M for root control and grease control activities although many utilities have observed a reduction in dry weather SSO events following implementation of more aggressive root and grease control programs. Consequently, this IPF methodology assumes a correlation based on the American Water Works Association ("AWWA"), *Benchmarking Performance Indicators for Water and Wastewater Utilities: Survey Data and Analyses Report*, 2005. Figure 7.7 of the AWWA document contains a relational performance indicator comparison chart between O&M cost per account and customer service complaints per 1,000 customers. This relational performance indicator comparison chart can be extrapolated to an overflow reduction comparison chart by assuming each SSO event corresponds to a customer complaint. This is a reasonable assumption since many SSO events are found when a

customer calls the utility to report the overflow, although in some cases, it is actually an "internal customer" (i.e., a utility staff member) generating the complaint.

As shown on Figure 7-7 from the AWWA document, the y-axis shows customer service complaints per 1,000 customers from high rates to low rates and the x-axis shows O&M cost per account from higher expenditures to lower expenditures. The colored areas of the chart show the first quartile (lowest) service level in blue, to the second and third quartiles in yellow, which include the median service levels, to the fourth quartile (highest) service level in pink from the 2005 utility survey data.

To this base AWWA relationship graph, we have added existing Baltimore City data points as shown by the blue dashed lines. Specifically, the City currently expends about $74 per account for annual O&M activities and experiences a customer complaint rate of approximately 11 complaints per 1,000 customers.

Under CIP Project 551-627, Wet Weather Program Operation and Management, the City's O&M expenditures will increase as shown in the red dashed lines added to the graph. The proposed expenditure will increase from its current level (about $74 per account) to roughly $157 per account. This is an increase of roughly 0.78 quartile.

The O&M expenditure increase thus results in a roughly 0.78 quartile improvement in the number of customer complaints. The number of complaints would therefore go from the existing level of approximately 11 complaints per 1,000 customers to about 3 complaints per 1,000 customers.

Figure excerpted from *Benchmarking Performance Indicators for Water and Wastewater Utilities: Survey Data and Analyses Report,* American Water Works Association, 2005. Quartile annotations used for IPF benefit calculations.

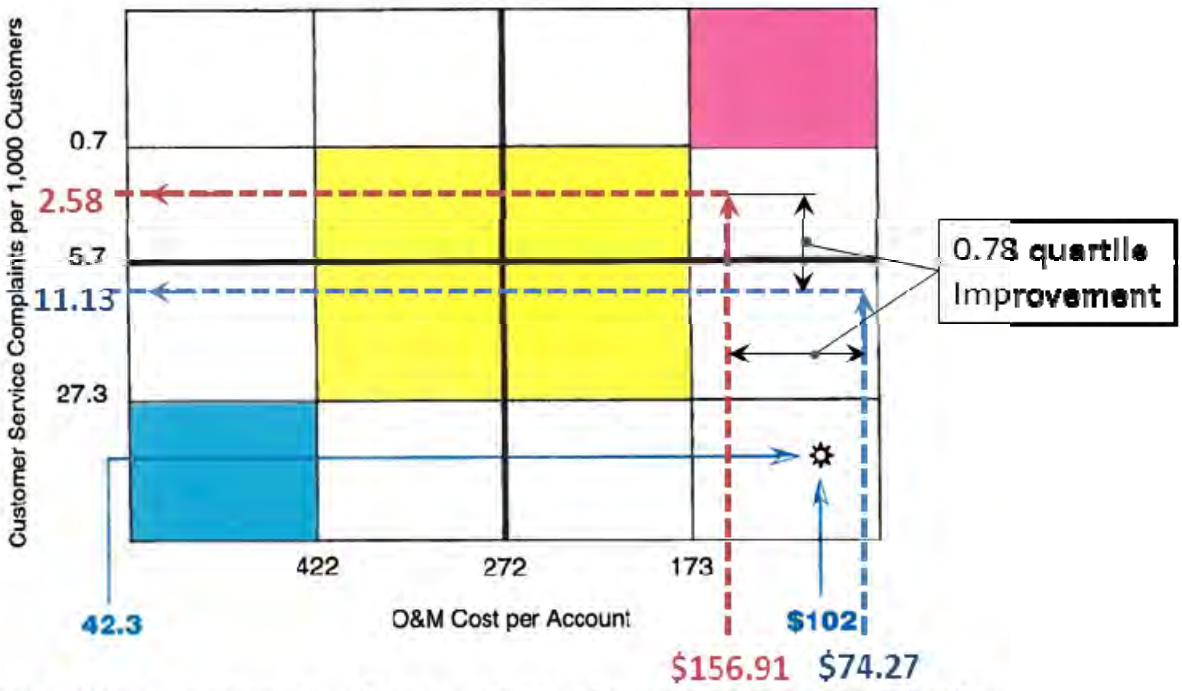

FIGURE 7–7 Water and Combined Services Utilities Comparison—Customer Service Complaints per 1,000 Customers Versus O&M Cost per Account

Since we are equating the reduction in customer complaints to the reduction in overflow events, this improvement in customer complaints is equivalent to a reduction of 77 percent in overflow events and thus in overflow volumes. The base overflow volume is the year 2011 actual annual dry weather SSO volume as reported to regulatory agencies, which was 6.7 million gallons.

Assuming that most of the SSOs eliminated by the additional O&M expenditures would be during dry weather, the pollutant event mean concentrations for raw wastewater were used in the calculation of the annual pounds of pollutant removed, as opposed to the event mean concentrations for SSO that were used for the Consent Decree capacity improvement projects.

The second project type with contributing to pollutant reduction benefits were the surface water projects. The City's surface water projects included in the current IPF consist predominantly of BMP installations, which are designed as part of efforts to meet TMDL requirements and trash reduction strategies of the City's MS4 NPDES permit. The types of surface water projects evaluated included: Large Stormwater Management Ponds/Wetlands, Stream Restoration, Urban Watershed Retrofits, and Facility Greening to address Chesapeake Bay TMDL goals; and Debris Collection Systems and Catch Basin Inserts for trash reduction.

Consistent with MDE's Phase II Watershed Implementation Plan to meet Waste Load Allocations of the Chesapeake Bay TMDL requirements,[1] the projects were evaluated by watershed for their respective pollutant reduction capabilities. The pollution reduction computations performed are outlined as follows:

a. Phosphorus removal in lbs/year was estimated using data associated with historical surface water projects, including past projects by Baltimore City's SWMD. The BMP effectiveness data provided by SWMD and used in the IPF computations for phosphorus reduction is shown in Table B.3 below.

Table B.3, Data-Based Scoring Plan Total Phosphorus Removal by BMP Projects

BMP Type	Typical Impervious Area (acres)	Assumptions	Annual Total Phosphorus Removed (pounds)
Large Storm Water	100	No debris collector; limited availability	167
Stream Restoration	150	No debris collector	480
Urban ESD BMP [1]	5	First flush water quality treatment	4.8
Impervious Removal (i.e., Greening)	2.5	Assumes reduction of runoff	5.1
Basin Inserts [2]	0.4	Additional for trash TMDL reduction requirements	0.5
Debris Collection Systems		Larger outfall trash TMDL reduction	4.5

[1] ESD = Environmental Site Design (micro-BMPs for Ultra Urban Retrofits). These include curb extensions and bioretention areas, which share similar costs per acre of treatment.

[2] Basin Inserts and Debris Collection Systems are used for debris removal, but are not efficient for phosphorus removal.

[1] Maryland Department of the Environment, *Maryland's Phase II Watershed Implementation Plan for the Chesapeake Bay TMDL*, March 30, 2012.

b. Nitrogen and Sediment removal were each computed in lbs/year delivered to the Chesapeake Bay using the Maryland Assessment Scenario Tool ("MAST")[2]. MAST is a web-based nutrient and sediment load estimator model used to streamline and facilitate Watershed Implementation Plans ("WIP2") consistent with the Chesapeake Bay TMDL restrictions. The annual pollutant reduction for each project evaluated is calculated within MAST by the application of the associated BMP effectiveness values and land use change. The base data in MAST was generated using the Hydrological Simulation Program – FORTRAN (HSPF), which was developed by EPA and the Phase IV Chesapeake Bay Program (CBP) Watershed Models.

   The reference scenario used in the Phase IV Watershed Model is based on 1985 land use, BMPs, point source loads, septic system loads, animal counts, etc.; and the application of hourly simulated hydrology of the 1984-1987 period, which is the average hydrology year used in the CBP. The Phase IV Watershed Model calibration is based on data that varies yearly for point source data and septic system loads, daily for atmospheric deposition, and uses constant 1990 land use data. For the calibration period, the base year 1990 Chesapeake Bay Program land use data set is used. For the Phase IV Watershed Model Reference Scenario, land use data was changed to 1985 using the land use and pasture change program. Hydrology data was adjusted to exclude Tropical Storm James - an extreme event.

   The inputs to MAST included the following:

   - Geographic – county, watershed.
   - BMP type.
   - Physical attributes such as square feet of restoration or acres of wetland.
   - Land use – Municipal Phase II MS4 Impervious or Municipal Phase II MS4 Pervious.

c. Trash Reduction at inlet was computed based on a removal effectiveness of 7 lbs/inlet/4.2 inches of precipitation.[3] With average yearly precipitation of 42 inches for the Baltimore area, this translates to a yearly estimate of 70 lbs/inlet. Each inlet debris collection project was assumed to be applicable to 300 inlets. The trash removal effectiveness was determined based on results of a similar system installed at the University of Southern California ("USC") campus. The USC completed a research project on the effectiveness of this system and published their findings a report titled "Hydraulic Performance, Pollutant Removal Efficiencies, and Economic Evaluation of Catch Basin Insert Devices," dated April 2006.

   In-line Debris Collection systems were seen by the SWMD to have trash reduction capabilities of 15 to 30 tons/year. An assumed mid-point value of 22.5 tons/year or 45,000 lbs/year trash reduction was used for all Debris Collector projects included in the IPF.[4, 5]

   Based on the removal estimates from the various listed references, pollutant reductions were calculated in lbs/year for each of the surface water projects in the IPF project listing.

The sixth Environmental criteria, Criterion 7, involved calculating the amount of land area being preserved or restored for in its natural habitat area. These calculations were project-specific estimates of the land area included in the project-defined boundaries for habitat preservation or restoration

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2 Devereus, Olivia H., Interstate Commission on the Potomac River Basin, *Maryland Assessment and Scenario Tool – General Features and User's Guide*, November, 2011.

3 COANDA, Inc., *Removal of Debris and Pollutants by COANDA Curb Inlet*, 2008.

4 Baltimore Department of Public Works, Surface Water Management Division, *Analysis of Stormwater, Utility Fact Sheet 2: CIP Projections*, March 9, 2012.

5 Chesapeake Bay Program Modeling Subcommittee, *Chesapeake Bay Watershed Model Application and Calculation of Nutrient and Sediment Loadings*, August 1998.

activities. An example in the criterion would be a stream restoration project. If the stream restoration project was identified to have 1,200 linear feet of stream to be restored inclusive of a 100 foot buffer on both sides of the stream, the calculation to determine an estimate of the square footage of restored area would be 1,200 times 100 times 2, equaling 240,000 square feet of habitat restoration.

Economic Data Based Criteria Calculations. As stated in the report, the Economic Criteria included Criterion 17, Job Stimulus, and Criterion 18, Capital Cost. The calculations associated with these two criteria are as follows.

Jobs generated by IPF projects were derived using multipliers from a regional economic impact model in combination with project expenditures to estimate the number of direct, indirect and induced jobs that would be generated by each project type. Direct jobs are defined as those generated by the project expenditures made by the City under each project. This direct effect represents the proportion of the expenditure in each industry that flows to material and service providers in the region. The indirect jobs are those generated by the backward-linked suppliers for any goods and services used by the directly affected activities. The induced jobs to the region are those generated from household expenditures associated with workers' earnings from both direct and indirect businesses and government. All three calculations were included in the job estimate calculation.

The regional economic impact analysis calculated the total number of jobs that would be generated by applying a jobs multiplier to the total cost of each project. The job multipliers were estimated for each project type using the regional economic impact model IMPLAN. Data were obtained from the Minnesota IMPLAN Group ("MIG") for Baltimore County and utilized with the IMPLAN model to estimate job multipliers for the specific industries that are likely to be affected by projects proposed by the City of Baltimore. The job multipliers used for this analysis are summarized in Table B.4.

Specifically, Column 1 of Table B.4 shows the type of expenditures estimated to occur for the numerous project types in which jobs were estimated. Column 2 summarizes the industry within the IMPLAN model that best represents these project expenditures. The number in parenthesis is the industry sector code designated by IMPLAN. For some projects, multiple industries were utilized to estimate jobs and Column 3 summarizes the percentage of expenditure that was applied to each industry type. Column 4 summarizes the number of total jobs that would be generated for each $1 million expenditure per industry. The job multipliers shown in Column 4 were applied to the estimated expenditures for each project to estimate total number of jobs that would be generated by each project proposed by the City.

Based on the job creation or retention levels predicted for the various projects from Table B.4, raw projects scores from 0 to 10 where then assigned by normalizing the data to the 10-point scale. This normalizing process to convert scores to a 10-point scale is detailed in the next section.

Table B.4, Data-Based Scoring Plan Job Multipliers Used to Estimate Total Jobs

Project Expenditure Types	Relevant IMPLAN Industry	Percentage of Expenditure Applied to Industry	Total Jobs Per $1 M in Expenditures
(Column 1)	(Column 2)	(Column 3)	(Column 4)
Stream Restoration [1]	Construction (36)	75	14.03
Stream Restoration [1]	Support Activities for Agriculture and Forestry (19)	25	22.10
Storm Water - Construction Only	Construction (36)	100	11.40
Professional Engineering Services	A/E Services (369)	100	16.22
Repair and Maintenance	Commercial and Industrial Machinery. Repairs (417)	100	17.38
Human Resources Consulting	Management, Scientific, Technical Consulting (374)	100	16.20
Environmental Services	Environmental and Other Technical Services (375)	100	16.90
Computer Support Services	Computer Support Services (371)	100	16.60

[1] Stream restoration was allocated 75 percent to construction industry job and 25 percent to support activity jobs.

Criterion 18, Capital Costs, was also evaluated based on actual data. In this case the data was the projected capital cost of the project. As with the Job Stimulus criteria, the Capital Cost criteria data was normalized to a 10-point scale. The normalization process is detailed in the next section.

Converting Data to Scores

The scoring scheme for data based scores was founded from consideration of the highest non-outlier scores and their effect on the scoring process. Outliers were defined as those data points that radically distorted the ability for all the projects in a given criteria to obtain realistically distributed scores. To prevent the outliers in some of the criteria from negatively affecting the scores of all the other projects, the outliers were removed from the linear analysis part of the scoring and automatically assigned the appropriate highest (or lowest) score in their criteria.

The linear scoring scheme for most of the data-based criteria is as follows:

- Identify and isolate extreme high and low outliers within each criteria data set that skew the data scoring process significantly.
- Establish a linear scoring scheme for each of the seven evaluation criteria starting at 0 with even intervals such that the highest non-outlier data point was a half-interval above a score of 10. This half-interval consideration creates the possibility that other non-outlier scores may also score a 10.
- Translate the numerical data value into a 0 to 10 score based on the established linear scale for that evaluation criteria.

For example, the maximum score for phosphorus removal is nearly 25,000 lbs/yr while the next-highest score is 1,440 lbs/yr. The highest score is considered an outlier and is not considered when setting the scoring ranges. The maximum non-outlying score is set at a half-interval above a score of 10 (i.e, 10.5), with 10 equal sized intervals counting down to zero. This is achieved by dividing the highest non-outlier score of 1,440 by 10.5 (the set score), making the calculated interval width 137 for this criteria. Any project with between 0 and 137 lbs/yr of phosphorus removed will score a 0, any with 137 to 274 lbs/yr removed will score a 1, continuing up to projects with over 1,370 lbs/yr scoring a 10.

It is important to point out that while most criteria award a higher score for higher values, the Capital Cost criteria is opposite in that this criteria awards a lower score for lower values. The rationale to this logic is that projects with low capital costs should be given higher priority than those with high capital costs.

Exceptions were made to the linear approach to account for the distribution of data for the job impact and capital costs criteria. Both of these evaluation criteria contained a substantial portion of projects clustered at high and low values. A linear scoring scheme for either of these criteria would result in most projects scoring either a 0 or a 10. To provide more resolution in the linearly translated results, the following manual adjustments were made to the linear scale translation for these two criteria:

- For the Job Stimulus evaluation criteria, projects that were predicted to create less than 50 jobs were given a score of 0. The remaining 1 through 10 scores were based on a linear scale from 50 to the maximum non-outlier score methodology described above.
- For the Capital Cost evaluation criteria, projects with capital costs of $3 million or less were given a score of 10. The remaining 9 through 0 scores were based on a linear scale with projects just over $3 million receiving a score of 9 and progressively higher cost projects receiving lower scores.

APPENDIX C

BENEFIT CRITERIA SCORING CALCULATIONS

Appendix C, Benefit Criteria Scoring Calculations

Table C.1, Benefit Criteria Scoring Definitions

QBL Category	Criteria #	Criteria	Sub Criteria and/or Criteria Detail	Score	Scoring Basis	Hypothetical Maximum Scores *(Before Balancing)*					
						Water Facilities	Water Utilities	Wastewater Facilities	Wastewater Utilities	Storm Water Facilities	Storm Water Utilities
Environmental	1	Pollutant Loading to Receiving Waters	Pathogens Removal - Wastewater.	0 to 10	# of organisms/year reduction - data will be normalized to produce a 0 to 10 scoring scale.	0	0	10	10	0	0
	2		Phosphorus Removal.	0 to 10	Actual Lbs/year removed - data will be normalized to produce a 0 to 10 scoring scale.	0	0	10	10	10	10
	3		Nitrogen Removal.	0 to 10	Actual Lbs/year removed - data will be normalized to produce a 0 to 10 scoring scale.	0	0	10	10	10	10
	4		Sediment Removal.	0 to 10	Actual Lbs/year removed - data will be normalized to produce a 0 to 10 scoring scale.	0	0	10	10	10	10
	5		Trash Removal.	0 to 10	Actual Lbs/year removed - data will be normalized to produce a 0 to 10 scoring scale.	10	0	10	0	10	10
	6	Regulatory	The project has regulatory drivers as listed.	0	Project does not address a regulatory issue.	10	0	10	10	10	10
				3	Project is part of proactive approach for permit compliance, but there is no schedule provided to state or federal agency.						
				6	Project is part of a permit implementation schedule, but not as a result of a regulatory inspection, violation or consent decree.						
				10	Project addresses a violation or consent decree from state or federal agency.						
	7	Habitat Preservation and Restoration	Area of ecosystem actively restored/preserved.	0 to 10	Actual ft^2 of habitat actively created or preserved (note that habitat mitigation should not count if original habitat was destroyed and restoration is mandated for the project, only additional or non-mandated ft^2 of habitat should be counted) - data will be normalized to produce a 0 to 10 scoring scale.	10	10	10	10	10	10
	8	Drinking Water Conservation and Control	The project contributes to or enhances the conservation or control of drinking water.	0	Project does not contribute to or enhance conservation or control of drinking water.	10	10	0	0	0	0
				5	Project contributes to or enables conservation or control of water in pipelines.						
				10	Project contributes to or enables conservation or control of water at the end user.						

Social	9	Health and Safety	The project reduces current or potential impacts to the following items: - Traffic (6 lanes or more) - Traffic (with no easy alternative detour) - Traffic (with easy alternative detour) - City homes (basement floods, water service) - County customers - City businesses (water service, access to business) - Streams and harbor (quantity and quality) - Other utilities - Hazard to human life, health or property	0	Impacts 0 items.	10	10	10	10	10	10
				2.5	Impacts 1 item.						
				5	Impacts 2 items.						
				7.5	Impacts 3 items.						
				10	Impacts more than 3 items.						
	10	Recreational Access	The project provides recreational opportunities for the public in the following manner: - Improves community aesthetics - Walking/running - Swimming - Biking - Picnics - Boating - Fishing	0	Impacts 0 items.	10	0	10	10	10	10
				2.5	Impacts 1 item.						
				5	Impacts 2 items.						
				7.5	Impacts 3 Items.						
				10	Impacts 4 or more items.						
	11	Urban Tree Canopy	The project contributes to the Chesapeake Bay Urban Tree Canopy Goals to restore 2,010 miles of forest buffers.	0	Does not contribute to Urban Tree Canopy.	10	10	10	10	10	10
				10	Contributes to the Urban Tree Canopy.						
	12	Customer Satisfaction	The project reduces the number of complaints or service disruptions.	0	Project does not address complaints.	10	10	10	10	10	10
				5	Project addresses 3 to 5 CSRs / community complaints / MCC inquiries within one year.						
				10	Project addresses more than 5 CSRs/ community complaints / MCC inquiries within one year.						
	13	Drinking Water Quality	The project delivers reductions in the following raw and finished water & delivery attributes to end users: - Microorganisms - Disinfectants - Disinfection Byproducts - Organic Chemicals - Inorganic Chemicals - Lead or copper - Taste, odor, color	0	Impacts 0 items.	10	10	0	0	0	0
				2.5	Impacts 1 item.						
				5	Impacts 2 items.						
				7.5	Impacts 3 Items.						
				10	Impacts 4 or more items.						
	14	Lower Income or Blighted Neighborhoods	The project benefits lower income or blighted neighborhoods.	0	No benefits to lower income or blighted neighborhoods.	10	10	10	10	10	10
				10	Benefits lower income or blighted neighborhoods.						

Economic	15	Alternative Funding	The project has additional funding sources.	0	No alternative funding has been found.	10	10	10	10	10	10
				2.5	Project will be eligible to receive a favorable-terms loan (usually MDE SRF).						
				5	Project has been selected for a favorable-terms loan (usually MDE SRF).						
				7.5	Project is eligible, but not confirmed, for alternative funding (grants, private partnerships or other departments).						
				10	Project has confirmed alternative funding (grants, private partnerships or other departments).						
	16	Annual O&M Costs	Annual O&M cost, including avoided costs.	0	Significantly increases (> 20%) O&M costs from what would otherwise exist without the project.	10	10	10	10	10	10
				3	Slightly increases (< 20%) O&M costs from what would otherwise exist without the project.						
				5	Neutral impact on O&M costs from what would otherwise exist without the project.						
				6	Slightly decreases (< 20%) O&M costs from what would otherwise exist without the project.						
				10	Significantly decreases (> 20%) O&M costs from what would otherwise exist without the project.						
	17	Job Stimulus	Jos created by the project, both construction and long term job creation.	0 to 10	Actual jobs created/ retained (count both construction and long-term) - data will be normalized to produce a 0 to 10 scoring scale.	10	10	10	10	10	10
	18	Capital Costs	Capital costs estimate for project.	0	Actual Capital Budget - data will be normalized to produce a 0 to 10 scoring scale.	10	10	10	10	10	10
				5							
				10							
Project Implementation & Efficacy	19	Service Life / Condition	The project addresses the condition of existing materials / systems in the following manner.	0	Project includes replacement of parts / system that are within 10 years of service life, but in good condition.	10	10	10	10	10	10
				2.5	Project includes replacement of parts / system that are within 5 years of service life, but in good condition.						
				5	Project includes replacement of parts / system that are past service life, but are in good condition.						
				7.5	Project includes replacement of parts / system that are not past service life, but are in poor condition.						
				10	Project includes replacement of parts / system that are past service life and failing.						
	20	Project Delay	The effect if this project is deferred at least 1 year. This is not to include regulatory impacts or fines, which are accounted for in environmental criteria.	0	No impact with delay.	10	10	10	10	10	10
				3.3	Project may be delayed at least one year without appreciable impact.						
				6.6	Some delay may be acceptable, although there may be cost impacts.						
				10	Any delay will have an unacceptable impact.						
	21	Collaboration	The project has involved engagement with community groups, environmental groups or NGOs.	0	No collaboration with community groups.	10	10	10	10	10	10
				3.3	Project meetings for affected community awareness.						
				6.6	Project engagement meetings held with both the affected community and additional environmental groups.						
				10	Community, environmental or other NGO groups are contributing $ or labor hours in the project.						

Appendix C, Benefits Criteria Scoring Calculations

Table C.2, Pollutant Reduction Benefit Calculations for Wastewater Utilities Projects

CIP Project Number	Project Name	Location	Average Annual Reduction in SSO Volume[1] (MG/year)	Nitrogen Reduction (Lbs/year)	Phosphorus Reduction (Lbs/year)	Sediment Reduction (Lbs/year)	Pathogen Reduction (# of organisms/ year)
551-144	GIS Updates & Mapping Program	City	N/A	-	-	-	-
551-404	Improvements/Rehab of Existing Sanitary Sewer	Various	N/A	-	-	-	-
551-410	Herring Run Interceptor Improvements	Herring Run SS	N/A	-	-	-	-
551-569	Urgent Need Sanitary Design Services	Various	N/A	-	-	-	-
551-609	SW Diversion Pressure Sewer Improvements	Southwest Diversion	N/A	-	-	-	-
551-611	Low Level Sewershed Improvements	Low Level SS	5.45	232.08	91.01	4,140.95	1.03E+14
551-612	Outfall Sewershed Improvements	Outfall SS	0.27	11.32	4.44	202.05	5.04E+12
551-614	Dundalk Sewershed Improvements	Dundalk SS	0.00	0.00	0.00	0.02	4.10E+08
551-616	Patapsco Sewershed Improvements	Patapsco SS	0.08	3.55	1.39	63.34	1.58E+12
551-620	High Level Sewershed Improvements	High Level SS	8.41	357.74	140.29	6,383.24	1.59E+14
551-622	Gwynns Falls Sewershed Improvements	Gwynns Falls SS	5.18	220.47	86.46	3,933.86	9.80E+13
551-624	Herring Run Sewershed Improvements	Herring Run SS	13.06	555.80	217.96	9,917.25	2.47E+14
551-626	Jones Falls Sewershed Improvements	Jones Falls SS	18.33	779.94	305.86	13,916.64	3.47E+14
551-627	Wet Weather Program Operation and Management	City	5.13	1,413.44	248.42	9,208.77	1.94E+15
551-NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	Various	N/A	-	-	-	-

[1] All SSO volumes are for wet weather related SSOs, except for Project 551-627, which primarily reduces dry weather SSOs. Additionally, for the Sewershed Improvement projects, both the 5- and 10-year recommended capacity improvement scenarios eliminated wet weather SSOs during the hydrologic period simulated (January, 1984 - December, 1995). Therefore, the pollutant reduction benefits are equivalent for the 5- and 10-year recommended capacity improvement scenarios from the design storm evaluation in this analysis. These calculations will be revised based on the recommendations from the continuous simulation methology analsys and level of protection recommendations when available.

Appendix C, Benefits Criteria Scoring Calculations

Table C.3, Pollutant Reduction Benefit Calculations for Surface Water Facilities Projects

CIP Project Number	Project Name	Location	Project Size	Nitrogen Reduction (lbs/yr)	Phosphorus Reduction (lbs/yr)	Sediment Reduction (lbs/yr)	Trash Reduction (lbs/yr)
525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	Kelly Avenue, Mt. Washington Avenue area, Gwynns Falls WS	1,000 ft	108.20	200	317,926	0
525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	Moravia Road, Back River WS	6,880 ft	1,154.80	1,376	2,891,821	0
525-405	ER4018 Powder Mill Run	Liberty Road and Northern Parkway,Gwynns Falls WS	3000 ft	324.50	600	953,780	0
525-449	ER4016 Bush Street Debris Collector	Bush Street at Washington Boulevard, Carrol Park, Gwynns Falls WS	45,000 lb	0.00	5	46,149	45,000
525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	Franklin Town Boulevard near Dead Run, Gwynns Falls WS	2,800 ft	302.90	560	890,194	0
525-NEW	Chinquapin Run Environmental Restoration Projects	Chinquapin Run / Back River WS	4,800 ft	805.70	960	2,032,064	0
525-NEW	Stony Run Environmental Restoration Projects	Stony Run / Jones Falls WS	5,840 ft	217.20	1,168	1,437,598	0
525-NEW	Moores Run Environmental Restoration Projects	Moores Run / Back River WS	7,500 ft	1,258.90	1,500	3,137,074	0
525-NEW	Stream Restoration TBD	Gwynns Falls WS	7,200 ft	778.90	1,440	2,289,072	0
525-NEW	ER4034 Biddison Run Debris Collector Project 1	Back River WS	45,000 lb	0.00	5	62,307	45,000
525-NEW	In-line Debris Collection System Projects Direct Harbor WS	Direct Harbor WS	180,000 lb	0.00	18	45,000	180,000
525-NEW	In-line Debris Collection System Projects Gwynns Falls	Gwynns Falls	135,000 lb	0.00	14	46,149	135,000
525-NEW	In-line Debris Collection System Projects Jones Falls	Jones Falls	90,000 lb	0.00	9	35,734	90,000
525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	Direct Harbor WS	40 Acres	63.40	38	9,797	0
525-NEW	Urban Watershed Retrofit Projects Back River WS	Back River WS	10 Acres	21.00	10	5,213	0
525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	Gwynns Falls WS	20 Acres	55.80	19	29,609	0
525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	Jones Falls WS	20 Acres	17.30	19	15,924	0
525-NEW	Facility Greening Projects Direct Harbor WS	Direct Harbor WS	20 Acres	5.70	41	1,307	0
525-NEW	Facility Greening Projects Gwynns Falls WS	Gwynns Falls WS	7.5 Acres	7.30	15	4,975	0
525-NEW	Facility Greening Projects Jones Falls WS	Jones Falls WS	10 Acres	2.40	20	2,691	0
525-NEW	Facility Greening Projects Back River WS	Back River WS	10 Acres	6.20	20	1,753	0
525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	Gwynns Falls WS	300 inlets	0.00	3	21,537	21,000
525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	Back River WS	300 inlets	0.00	3	29,076	21,000
525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	Jones Falls WS	300 inlets	0.00	3	16,676	21,000
525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	Direct Harbor WS	600 inlets	0.00	6	42,000	42,000

Table C.4, Job Stimulus Benefit Calculations

Project Type	CIP Project Number	Project Name	Description	Location	Total Cost	IMPLAN Industry	Job Multiplier (No. of Jobs Per $1 M in Expenditure)	Job Estimate
SWU	520-093	Race Street Box Culvert	Infrastructure Rehabilitation project to address structural failure.	Race Street/ Direct Harbor WS	$3,495,000	Construction	11.4	39.8
SWU	520-715	Northeast Baltimore Drainage Improvements	Infrastructure Rehabilitation project to decrease documented flooding within neighborhood.	Beverly Hills and Arcadia Neighborhood/ 335 sub-watershed / Back River WS	$3,200,000	Construction	11.4	36.5
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	Infrastructure Rehabilitation project to decrease documented flooding along major highway	5000 block Pulaski Highway east of Monument Street and west of CSX RR bridge, Back River WS	$425,000	Construction	11.4	4.8
SWU	520-708	Storm Water Pumping Stations Improvements	Installation of an off-line wetland to treat water from Moores Run.	Highland Stormwater Pump Station	$1,630,000	Commercial and Industrial Machinery Repairs	17.38	28.3
SWU	520-451	Fairmount Storm Drain Improvements	Repair erosion and flooding along the Gwynns Falls Parkway in the Fairmount neighborhood. The construction project helps meet the mandates of the City's MDE MS4 Stormwater Permit and addresses neighborhood flooding issues	Leaking Park / Gwynns Falls WS	$1,850,000	Construction	11.4	51.5
SWU	520-NEW	Patapsco Avenue Drainage Improvement	Infrastructure Rehabilitation project to decrease documented flooding along major highway and the upstream neighborhood.	Patapsco Avenue / Cherry Hill Community, Direct Harbor WS	$4,520,000	A/E Services	16.22	64.9
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	Hydrology and hydraulic modeling of entire stormwater drainage system in the City.	City	$4,000,000	Environmental and Other Technical Services	16.9	75.7
SWU	520-NEW	North Point Road Drainage Improvement	Infrastructure Rehabilitation project to decrease documented flooding along major highway	North Point Blvd at Quad Avenue, Back River WS	$4,480,000	A/E Services	16.22	4.9
SWU	520-NEW	2300 Block Seamon Ave	Storm drain outfall pipe construction	2300 Block Seamon Ave	$300,000	Construction	11.4	3.4
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	Stream restoration, including failing slope that is encroaching adjacent roadway.	Kelly Avenue, Mt. Washington Avenue area, Gwynns Falls WS	$1,215,000	Construction	11.4	13.9
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	Stream restoration of 3030 ft length upstream of Moravia to Sipple Ave; Stream restoration of 3,850 LF between Sipple Ave and Sinclair Avenue	Moravia Road, Back River WS	$3,080,000	Construction and Support Activites for Agriculture and Forestry	11.4; 22.1	43.4
SWF	525-405	ER4018 Powder Mill Run	Stream restoration of 3000 ft length upstream along Northern Parkway	Liberty Road and Northern Parkway,Gwynns Falls WS	$1,500,000	Construction and Support Activites for Agriculture and Forestry	11.4; 22.1	21.1
SWF	525-407	Moores Run Wetlands ER4004	Installation of an off-line wetland to treat water from Moores Run.	Moores Run / Back River WS	$4,285,000	Construction and Support Activites for Agriculture and Forestry	11.4; 22.1	60.3
SWF	525-407	Large SWM BMP	Installation of a large wetland area to treat surface waters along existing stream.	Jones Falls WS	$2,300,000	Construction and Support Activites for Agriculture and Forestry	11.4; 22.1	32.4
SWF	525-449	ER4016 Bush Street Debris Collector	Installation of a vault net debris collection system to capture trash and debris	Bush Street at Washington Boulevard, Carrol Park, Gwynns Falls WS	$3,050,000	Construction	11.4	34.8
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	Culvert replacement and stream restoration of 2800 LF of stream channel.	Franklin Town Boulevard near Dead Run, Gwynns Falls WS	$1,215,000	Construction and Support Activites for Agriculture and Forestry	11.4; 22.1	17.1
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	Stream restoration of 4,800 LF of stream	Chinquapin Run / Back River WS	$3,450,000	Construction and Support Activites for Agriculture and Forestry	11.4; 22.1	48.6
SWF	525-NEW	Stony Run Environmental Restoration Projects	Stream restoration of 5,840 LF of stream	Stony Run / Jones Falls WS	$4,000,000	Construction and Support Activites for Agriculture and Forestry	11.4; 22.1	56.3
SWF	525-NEW	Moores Run Environmental Restoration Projects	Stream restoration of 7,500 LF of stream	Moores Run / Back River WS	$5,190,000	Construction and Support Activites for Agriculture and Forestry	11.4; 22.1	73.0
SWF	525-NEW	Stream Restoration TBD	Stream restoration of 7,200 LF of stream	Gwynns Falls WS	$5,300,000	Construction and Support Activites for Agriculture and Forestry	11.4; 22.1	74.6
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	An in-line debris collections system (either CDS or vault net system) installed upstream of stream restoration projects	Back River WS	$700,000	Construction	11.4	8.0
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	An in-line debris collections system (either CDS or vault net system) to capture a large drainage area.	Direct Harbor WS	$2,320,000	Construction	11.4	26.4

Project Type	CIP Project Number	Project Name	Description	Location	Total Cost	IMPLAN Industry	Job Multiplier (No. of Jobs Per $1 M in Expenditure)	Job Estimate
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	An in-line debris collections system (either CDS or vault net system) to capture a large drainage area.	Gwynns Falls	$1,740,000	Construction	11.4	19.8
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	An in-line debris collections system (either CDS or vault net system) to capture a large drainage area.	Jones Falls	$1,160,000	Construction	11.4	13.2
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	Installation of retro-fit micro- practices to meet MS4 restoration requirements and Bay TMDL.	Direct Harbor WS	$6,720,000	Construction	11.4	76.6
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	Installation of retro-fit micro- practices to meet MS4 restoration requirements and Bay TMDL.	Back River WS	$1,680,000	Construction	11.4	19.2
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	Installation of retro-fit micro- practices to meet MS4 restoration requirements and Bay TMDL.	Gwynns Falls WS	$3,360,000	Construction	11.4	38.3
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	Installation of retro-fit micro- practices to meet MS4 restoration requirements and Bay TMDL.	Jones Falls WS	$3,360,000	Construction	11.4	38.3
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	Removal of impervious area to meet MS4 restoration requirements and Bay TMDL.	Direct Harbor WS	$3,440,000	Construction	11.4	39.2
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	Removal of impervious area to meet MS4 restoration requirements and Bay TMDL.	Gwynns Falls WS	$1,290,000	Construction	11.4	14.7
SWF	525-NEW	Facility Greening Projects Jones Falls WS	Removal of impervious area to meet MS4 restoration requirements and Bay TMDL.	Jones Falls WS	$1,720,000	Construction	11.4	19.6
SWF	525-NEW	Facility Greening Projects Back River WS	Removal of impervious area to meet MS4 restoration requirements and Bay TMDL.	Back River WS	$1,720,000	Construction	11.4	19.6
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	Trash collection systems installed at the inlet to meet the upcoming Trash TMDL and decrease storm drain pipe clogging.	Gwynns Falls WS	$440,000	Construction	11.4	5.0
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	Trash collection systems installed at the inlet to meet the upcoming Trash TMDL and decrease storm drain pipe clogging.	Back River WS	$440,000	Construction	11.4	5.0
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	Trash collection systems installed at the inlet to meet the upcoming Trash TMDL and decrease storm drain pipe clogging.	Jones Falls WS	$440,000	Construction	11.4	5.0
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	Trash collection systems installed at the inlet to meet the upcoming Trash TMDL and decrease storm drain pipe clogging.	Direct Harbor WS	$880,000	Construction	11.4	10.0
WF	557-068	Urgent Need for Loch Raven - Roads & Culvert Maintenance	Loch Raven Roads & Culvert Maintenance	Loch Raven Reservoir	$12,406,425	Construction	11.4	141.4
WF	557-068	Urgent Need for Pretty Boy Reservoir - Roads & Culvert Maintenance	Pretty Boy Reservoir Roads & Culvert Maintenance	Pretty Boy Reservoir	$11,400,000	Construction	11.4	130.0
WF	557-068	Urgent Need for Liberty Reservoir - Roads & Culvert Maintenance	Liberty Roads & Culvert Maintenance	Liberty Reservoir	$5,530,000	Construction	11.4	63.0
WF	557-070	Watershed Bridge maintenance	Spooks Hill Road Bridge, Warren Road Bridge, Becklysville Road Bridge, Prettyboy Dam Bridge, Phoenix Road, George's Creek Road, Loch Raven Drive, Cotter Road	Various	$45,980,000	Construction	11.4	524.2
WF	557-158	Earthen Dam Improvement Program WC-1127	Earthen Dam Improvement Program WC-1127	Various	$6,150,000	Construction	11.4	70.1
WF	557-300	Urgent Needs Water Facilities - Annual Improvements	Ashburton WFP, Montebello WFP I & II, Liberty Reservoir Dam and Prettyboy Dam	Various	$26,641,000	Commercial and Industrial Machinery Repairs	17.38	462.9
WF	557-312	Montebello WTP 1 & 2 Improvements	Montebello WTP 1 & 2 Improvements	Montebello	$128,400,000	Commercial and Industrial Machinery Repairs	17.38	2231.0
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	Montebello Water Filtration Plant Laboratory Facilities	Montebello	$11,800,000	Construction	11.4	134.5
WF	557-696	Chlorine Handling Safety Improvements WC-1150	Chlorine Handling Safety Improvements WC-1150	Various	$49,720,000	Environmental and other Technical Services	16.9	840.3
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	Montebello 2 FW Reservoir Improvements	Montebello 2 FW Reservoir	$44,300,000	Construction	11.4	505.0

Project Type	CIP Project Number	Project Name	Description	Location	Total Cost	IMPLAN Industry	Job Multiplier (No. of Jobs Per $1 M in Expenditure)	Job Estimate
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	Guilford FW Reservoir Improvements	Guilford FW Reservoir	$32,203,353	Construction	11.4	367.1
WF	557-713	Finished Water Improvements - Towson FW Reservoir	Towson FW Reservoir Improvements	Towson FW Reservoir	$24,430,000	Construction	11.4	278.5
WF	557-715	Finished Water Improvements - Ashburton FW Reservoir	Ashburton FW Reservoir Improvements	Ashburton FW Reservoir	$39,027,702	Construction	11.4	444.9
WF	557-716	Finished Water Improvements - Druid Lake FW Reservoir	Druid Lake FW Reservoir Improvements	Druid Lake FW Reservoir	$42,996,395	Construction	11.4	490.2
WF	557-727	Deer Creek Pumping Station Improvements	Deer Creek Pumping Station Improvements	Deer Creek	$26,220,787	Commercial and Industrial Machinery Repairs	17.38	455.6
WF	557-730	Fullerton Water Filtration Plant WC 1169	Fullerton Water Filtration Plant WC 1169	Fullerton	$495,000,000	A/E Services; Construction	16.22; 11.4	6358.2
WF	557-731	Montebello Water Recycle Program	Montebello Water Recycle Program	Montebello	$34,300,000	A/E Services; Construction	16.22; 11.4	440.6
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	Maint Bldg. Impr. At Loch Raven Dam	Loch Raven	$11,800,000	A/E Services	16.22	191.4
WF	557-921	Maint Bldg. Impr. At Liberty Dam WC 1207	Maint Bldg. Impr. At Liberty Dam WC 1207	Liberty	$23,750,000	A/E Services	16.22	385.1
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	Guilford Pumping Station Rehabilitation WC 1120	Guilford Pumping Station	$18,250,000	Commercial and Industrial Machinery Repairs	17.38	317.1
WF	557-922	Vernon Pump Station Rehabilitation	Vernon Pump Station Rehabilitation	Vernon Pump Station	$18,250,000	Commercial and Industrial Machinery Repairs	17.38	317.1
WF	557-923	Cromwell Pump Station Rehabilitation	Cromwell Pump Station Rehabilitation	Cromwell Pump Station	$18,250,000	Commercial and Industrial Machinery Repairs	17.38	317.1
WF	557-924	Pikesville Pump Station Rehabilitation	Pikesville Pump Station Rehabilitation	Pikesville Pump Station	$11,600,000	Commercial and Industrial Machinery Repairs	17.38	201.6
WF	557-926	Towson Pump Station Rehabilitation	Towson Pump Station Rehabilitation	Towson Pump Station	$8,000,000	Commercial and Industrial Machinery Repairs	17.38	139.0
WF	557-928	Ashburton Pump Station Rehabilitation	Ashburton Pump Station Rehabilitation	Ashburton Pump Station	$34,600,000	Commercial and Industrial Machinery Repairs	17.38	601.2
WF	557-927	Ashburton Chemical Laboratory	Ashburton Chemical Laboratory	Ashburton	$6,100,000	Commercial and Industrial Machinery Repairs	17.38	106.0
WF	557-928	Urgent needs - Water Facilities Engineering	Urgent needs - Water Facilities Engineering	Various	$1,500,000	A/E Services	16.22	24.3
WF	551-573	Raw water Tunnel Inspections	Raw Water Tunnels inspection to determine conditions, to assess capabilities for continued service, and to identify needed improvements to maintain reliable water supply.	Various	$500,000	A/E Services	16.22	8.1
WF	NEW	Water Recycling and Solids Handling - Ashburton	Design and construction of water recycling facility at the Ashburton Filtration Plant to reduce the demand on raw water supply, minimize the impact on the environment and decrease maintanence on wastewater conveyance system.	Ashburton	$9,550,000	A/E Services; Construction	16.22; 11.4	122.7
WF	NEW	Inspection/Maintenance of PS'S		Various	$138,657,450	Commercial and Industrial Machinery Repairs	17.38	2409.2
WF	NEW	Personnel training in Electrical and Instrumentation certification.	Provide trainning to pumping technicians working on electrical, and Instrumentation to meet NFPA 70 E compliance is very important to obtain certifiation and become qualified to perfom this type of work.	City	$300,000	A/E Services	16.22	4.9
WF	NEW	Staffing Needs	Staffing Needs	City	$500,000	Management, Scientific, Technical Consulting	16.2	8.1
WF	NEW	Preventive Maintenace Program	Preventive maintenance program shall be part of daily operation of all pumping facilities. A computerized record of equipment in our faciities shall be created and shall include recommended schedule maintenace and shall create work order to our personnel to mantain equipment in good conditions preventing major failures.	City	$3,000,000	Commercial and Industrial Machinery Repairs	17.38	52.1
WF	NEW	Montebello Washwater Lake Dredging &	Montebello Washwater Lake Dredging & Remediation	Montebello	$13,100,000	Construction	11.4	149.3

Project Type	CIP Project Number	Project Name	Description	Location	Total Cost	IMPLAN Industry	Job Multiplier (No. of Jobs Per $1 M in Expenditure)	Job Estimate
		Remediation						
WF	NEW	Hydropower Study	Study a hydropower station to be built downstream of Loch Raven and Prettyboy reservoirs.	Loch Raven	$12,100,000	A/E Services	16.22	196.2
WF	NEW	Baltimore City Water Bottling - Feasibility Study	Feasibility study to consider a Water Bottling Facility to market City water.	City	$12,100,000	A/E Services	16.22	196.2
WF	NEW	Water Supply Capacity Analysis	Study Raw Water Supply and Capacity requiements to allow the City to meet service area water demands during extended drought conditions.	City	$96,250,000	A/E Services	16.22	1560.8
WU	557-002	Water Utility Billing System	Water Utility Billing System	City	$25,000,000	Computer Support Services	16.6	415.6
WU	557-031	Water Distribution System - Improvements	Water Distribution System - Improvements	Various	$14,177,010	Commercial and Industrial Machinery Repairs	17.38	246.3
WU	557-099	GIS Support and Improvements	GIS Support and Improvements	City	$10,750,000	Computer Support Services	16.6	178.7
WU	557-100	Water Infrastructure Rehabilitation	Water Infrastructure Rehabilitation	Various	$74,993,325	Commercial and Industrial Machinery Repairs	17.38	1303.0
WU	557-101	Water Mains - Installation	Water Mains - Installation	Various	$11,666,205	Commercial and Industrial Machinery Repairs	17.38	202.7
WU	557-130	Water System Cathodic Protection	Water System Cathodic Protection	Various	$4,350,117	Commercial and Industrial Machinery Repairs	17.38	75.6
WU	557-133	Meter Replacement Program	Meter Replacement Program	Various	$162,273,000	Commercial and Industrial Machinery Repairs	17.38	2819.6
WU	557-400	Valve and Hydrant Exercising - Annual	Valve and Hydrant Exercising - Annual	Various	$8,892,033	Commercial and Industrial Machinery Repairs	17.38	154.5
WU	557-638	Water Audit	Water Audit	Various	$8,642,338	A/E Services	16.22	140.1
WU	557-689	Urgent Needs Water Engineering Services	Urgent Needs Water Engineering Services	Various	$6,300,000	A/E Services	16.22	102.2
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	Water Main Rehabilitation and Replacement in Identified Areas	Various	$5,280,000	Commercial and Industrial Machinery Repairs	17.38	91.7
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	Large Main Rehab & Replacement, mainly cast iron and steel	Various	$1,378,000	Commercial and Industrial Machinery Repairs	17.38	23.9
WU	NEW	Large Valve Replacement	Valve Replacement	Various	$17,234,451	Commercial and Industrial Machinery Repairs	17.38	299.5
WU	NEW	SCADA Upgrades	SCADA Upgrades	Various	$1,500,000	A/E Services	16.22	24.3
WU	NEW	Water modeling	Water modeling	Various	$150,000	A/E Services	16.22	2.4
WU	NEW	Leak Detection & Rehab – Large mains	Comprehensive plan for leak detection to accurately determine mains that require maintenance prior to their scheduled replacement. Anticipated to be a yearly program with a set percentage of water mains to be evaluated	Various	$6,731,481	A/E Services	16.22	109.2
WU	557-687	Large Main Rehab & Replacement, PCCP	Large Main Rehab & Replacement, PCCP	Various	$30,785,000	Commercial and Industrial Machinery Repairs	17.38	534.9
WWF	551-526	Back River Digester Renovation SC-8526	Back River Digester Renovation SC-8526	Back River	$50,772,000	Commercial and Industrial Machinery Repairs	17.38	882.2
WWF	551-528	Patapsco ENR Denitrification and Nitrification	Patapsco ENR Denitrification and Nitrification	Patapsco	$280,814,078	A/E Services; Construction	16.22; 11.4	1366.1
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	SCADA System Upgrades, Var. Pumping Stations	Various	$937,765	A/E Services	16.22	15.2
WWF	551-533	Annual Facilities Improvements	Annual Facilities Improvements	Various	$3,000,000	Commercial and Industrial Machinery Repairs	17.38	52.1
WWF	551-533	Back River Facilities Improvements	Back River Facilities Improvements	Back River	$7,312,908	Commercial and Industrial Machinery Repairs	17.38	127.1
WWF	551-533	Patapsco Facilities Improvements	Patapsco Facilities Improvements	Patapsco	$20,084,000	Commercial and Industrial Machinery Repairs	17.38	349.0
WWF	551-557	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	Back River	$489,900,237	Commercial and Industrial Machinery Repairs	17.38	8512.2

Project Type	CIP Project Number	Project Name	Description	Location	Total Cost	IMPLAN Industry	Job Multiplier (No. of Jobs Per $1 M in Expenditure)	Job Estimate
WWF	551-561	Back River Settling Tanks	Back River Settling Tanks SC-829	Back River	$12,388,975	Commercial and Industrial Machinery Repairs	17.38	215.3
WWF	551-585	Pat LOX Plant Upgrade SC-868	Pat LOX Plant Upgrade	Patapsco	$5,276,607	Commercial and Industrial Machinery Repairs	17.38	91.7
WWF	551-681	WW Facilities Security Improvements	WW Facilities Security Improvements	Various	$500,000	Commercial and Industrial Machinery Repairs	17.38	8.7
WWF	551-685	Back River Scum & Grease System	Back River Scum & Grease System SC-870	Back River	$7,040,000	Commercial and Industrial Machinery Repairs	17.38	122.3
WWF	551-687	Patapsco Chlorine Conversion SC-857	Patapsco Chlorine Conversion	Patapsco	$4,250,000	Commercial and Industrial Machinery Repairs	17.38	73.8
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	Back River WWTP Primary and Influent Facilities Rehabilitation	Back River	$112,800,000	A/E Services	16.22	1829.2
WWF	551-692	Back River Electrical System Upgrade	Electrical System Upgrade	Various	$35,980,000	Commercial and Industrial Machinery Repairs	17.38	625.2
WWF	551-692	Patapsco Electrical System Upgrade	Electrical System Upgrade	Various	$40,690,000	Commercial and Industrial Machinery Repairs	17.38	707.0
WWF	551-752	McComas Street PS/FM Upgrade	McComas Street PS/FM Upgrade	McComas Street PS	$130,000	Commercial and Industrial Machinery Repairs	17.38	0.6
WWF	551-755	Pump Station Force Main Improvements, various locations	Pump Station Force Main Improvements: Quad Ave, Dundalk	Various	$13,835,630	A/E Services; Construction	16.22; 11.4	67.3
WWF	551-503: On Call	On-Call Engineering Services	On-Call Engineering Services	Various	$15,850,000	A/E Services	16.22	257.0
WWF	NEW	Optimization of Inventory Control	Optimization of inventory control system at the Back River and Patapsco WWTP's by installing automated storage devices	Various	$2,325,000	Management, Scientific, Technical Consulting	16.2	37.7
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	Back River	$1,225,000	Commercial and Industrial Machinery Repairs	17.38	21.3
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	Redundant force mains for the Westport, Fort McHenry, and Clinton Street Area Pumping Stations	Various	$2,425,000	A/E Services	16.22	39.3
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	Removal and disposal of 125,000 cubic yards (assumed 187,000 Tons) of chrome contaminated soil at the Patapsco Wastwater Treatment Plant.	Patapsco	$83,250,000	Environmental and Other Technical Services	16.9	1406.9
WWU	551-144	GIS Updates & Mapping Program GIS Updates & Mapping Program	GIS Updates & Mapping Program GIS Updates & Mapping Program GIS Engineering Support	City	$2,387,000	A/E Services	16.22	38.7
WWU	551-627	Wet Weather Program Operation and Management	Wet Weather Program Operation and Management	City	$17,836,751	A/E Services	16.22	289.2
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	Infiltration/Inflow Correction (Lining Projects)	Various	$36,774,000	Environmental and Other Technical Services	16.9	621.5
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	Contracted services for cleaning sanitary sewer interceptors, siphons and right of way.	Various	$27,500,000	Environmental and Other Technical Services	16.9	464.8
WWU	551-410	Herring Run Interceptor improvements	Herring Run Interceptor improvements	Herring Run	$12,276,673	Commercial and Industrial Machinery Repairs	17.38	213.3
WWU	551-569	Urgent Need Sanitary Design Services	Urgent Need Sanitary Design Services	Various	$24,000,000	Commercial and Industrial Machinery Repairs	17.38	417.0
WWU	551-609	SW Diversion Pressure Sewer Improvements	SW Diversion Pressure Sewer Improvements	Southwest Diversion	$54,293,425	Commercial and Industrial Machinery Repairs	17.38	943.4
WWU	551-611	Low Level Sewershed Improvements	Low Level Sewershed Improvements	Low Level Sewershed	$85,850,000	Commercial and Industrial Machinery Repairs	17.38	1491.7
WWU	551-612	Outfall Sewershed Improvements	Outfall Sewershed Improvements	Outfall Sewershed	$198,190,000	Commercial and Industrial Machinery Repairs	17.38	3443.6
WWU	551-614	Dundalk Sewershed Improvements	Dundalk Sewershed Improvements	Dundalk Sewershed	$14,150,000	Commercial and Industrial Machinery Repairs	17.38	245.9
WWU	551-616	Patapsco Sewershed Improvements	Patapsco Sewershed Improvements	Patapsco Sewershed	$26,860,000	Commercial and Industrial Machinery Repairs	17.38	466.7

Project Type	CIP Project Number	Project Name	Description	Location	Total Cost	IMPLAN Industry	Job Multiplier (No. of Jobs Per $1 M in Expenditure)	Job Estimate
WWU	551-620	High Level Sewershed Improvements	High Level Sewershed Improvements	High Level Sewershed	$61,640,000	Commercial and Industrial Machinery Repairs	17.38	1071.0
WWU	551-622	Gwynns Falls Sewershed Improvements	Gwynns Falls Sewershed Improvements	Gwynns Falls Sewershed	$219,110,000	Commercial and Industrial Machinery Repairs	17.38	3807.1
WWU	551-624	Herring Run Sewershed Improvements	Herring Run Sewershed Improvements	Herring Run Sewershed	$234,230,000	Commercial and Industrial Machinery Repairs	17.38	4069.8
WWU	551-626	Jones Falls Sewershed Improvements	Jones Falls Sewershed Improvements	Jones Falls Sewershed	$123,650,000	Commercial and Industrial Machinery Repairs	17.38	2148.5

APPENDIX D

PROJECT SCHEDULE GANTT CHARTS

Appendix D, Project Schedule Gantt Charts

Table D.1, Status Quo Gantt Chart

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
SWU	520-102	Small Storm Drain and Inlet Repair	0.40	$ 22.20																				
SWU	520-093	Race Street Box Culvert	0.39	$ 3.50																				
SWU	520-715	Northeast Baltimore Drainage Improvements	0.38	$3.20																				
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	0.44	$0.43																				
SWU	520-708	Storm Water Pumping Station Improvements Highland Town	0.38	$1.63																				
SWU	520-451	Fairmount Storm Drain Improvements	0.35	$1.85																				
SWU	520-NEW	Patapsco Avenue Drainage Improvement	0.44	$4.52																				
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	0.28	$4.00																				
SWU	520-NEW	North Point Road Drainage Improvement	0.44	$4.48																				
SWU	520-NEW	2300 Block Seamon Ave	0.44	$0.30																				
SWU	NEW	Harris Creek Storm Drainage	0.50	$4.90																				
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	0.45	$1.22																				
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	0.67	$3.08																				
SWF	525-405	ER4018 Powder Mill Run	0.53	$1.50																				
SWF	525-449	ER4016 Bush Street Debris Collector	0.36	$3.05																				
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	0.50	$1.22																				
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	0.60	$3.45																				
SWF	525-NEW	Stony Run Environmental Restoration Projects	0.54	$4.00																				
SWF	525-NEW	Moores Run Environmental Restoration Projects	0.60	$5.19																				
SWF	525-NEW	Stream Restoration TBD	0.64	$5.30																				
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	0.35	$0.70																				
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	0.37	$2.32																				
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	0.38	$1.74																				
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	0.37	$1.16																				
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	0.44	$6.72																				
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	0.45	$1.68																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	0.44	$3.36																				
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	0.44	$3.36																				
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	0.44	$3.44																				
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	0.44	$1.29																				
SWF	525-NEW	Facility Greening Projects Jones Falls WS	0.44	$1.72																				
SWF	525-NEW	Facility Greening Projects Back River WS	0.44	$1.72																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	0.44	$0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	0.44	$0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	0.44	$0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	0.44	$0.44																				
WU	557-002	Water Utility Billing System	0.36	$12.50																				
WU	557-031	Water Distribution System - Improvements	0.47	$13.49																				
WU	557-099	GIS Support and Improvements	0.32	$6.37																				
WU	557-100	Water Infrastructure Rehabilitation	0.57	$329.32																				
WU	557-101	Water Mains - Installation	0.62	$10.11																				
WU	557-130	Water System Cathodic Protection	0.30	$4.96																				
WU	557-133	Meter Replacement Program	0.35	$96.05																				
WU	557-400	Valve and Hydrant Exercising - Annual	0.33	$0.74																				
WU	557-638	Water Audit	0.33	$9.55																				
WU	557-689	Urgent Needs Water Engineering Services	0.52	$4.72																				
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	0.61	$22.91																				
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	0.60	$21.28																				
WU	NEW	Large Valve Replacement	0.36	$2.94																				
WU	NEW	SCADA Upgrades	0.43	$5.28																				
WU	NEW	Water modeling	0.42	$17.23																				
WU	NEW	Leak Detection & Rehab – Large mains	0.44	$1.50																				
WU	557-687	Large Main Rehab & Replacement, PCCP	0.61	$0.15																				
WF	557-068	Loch Raven - Roads & Culvert repair	0.41	$3.96																				
WF	557-068	Pretty Boy Reservoir - Roads & Culvert repair	0.42	$6.74																				
WF	557-068	Liberty Reservoir - Roads & Culvert repair	0.42	$3.32																				
WF	557-070	Watershed Bridge Repair	0.36	$26.43																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WF	557-158	Earthen Dam Improvement Program WC-1127	0.35	$3.69																				
WF	557-300	Urgent Needs Water Facilities - Annual Improvements	0.37	$21.72																				
WF	557-312	Montebello WTP 1 & 2 Improvements	0.32	$72.57																				
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	0.41	$6.81																				
WF	557-696	Chlorine Handling Safety Improvements WC-1150	0.40	$29.92																				
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	0.47	$8.69																				
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	0.46	$13.59																				
WF	557-713	Finished Water Improvements - Towson FW Reservoir	0.47	$3.47																				
WF	557-715	UV disinfection - Ashburton FW Reservoir	0.52	$22.62																				
WF	557-716	UV disinfection - Druid Lake FW Reservoir	0.52	$25.08																				
WF	557-727	Deer Creek Pumping Station Improvements	0.30	$6.54																				
WF	557-730	Fullerton Water Filtration Plant WC 1169	0.43	$182.25																				
WF	557-731	Montebello Water Recycle Program	0.21	$18.61																				
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	0.36	$7.08																				
WF	557-921	Maint Bldg. Impr. At Liberty Dam WC 1207	0.20	$13.74																				
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	0.40	$7.04																				
WF	557-922	Vernon Pump Station Rehabilitation	0.40	$11.13																				
WF	557-923	Cromwell Pump Station Rehabilitation	0.40	$7.12																				
WF	557-924	Pikesville Pump Station Rehabilitation	0.40	-																				
WF	557-926	Towson Pump Station Rehabilitation	0.40	$0.10																				
WF	557-928	Ashburton Pump Station Rehabilitation	0.391	$18.13																				
WF	557-927	Ashburton Chemical Laboratory	0.41	$2.38																				
WF	557-928	Urgent needs - Water Facilities Engineering	0.55	$0.75																				
WF	557-573	Raw water Tunnel Inspections	0.50	$0.50																				
WF	NEW	Water Recycling and Solids Handling - Ashburton	0.53	$9.55																				
WF	NEW	Representative Recurring Project: Inspection/Maintenance of PS'S	0.39	$177.08																				
WF	NEW	Personnel training in Electrical and Instrumentation certification.	0.26	$0.30																				
WF	NEW	Staffing Needs	0.39	$0.50																				
WF	NEW	Preventive Maintenace Program	0.50	$3.00																				
WF	NEW	Montebello Washwater Lake Dredging & Remediation	0.26	$13.10																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WF	NEW	Hydropower Study	0.19	$12.10																				
WF	NEW	Baltimore City Water Bottling - Feasibility Study	0.15	$12.10																				
WF	NEW	Water Supply Capacity Analysis	0.45	$96.25																				
WWU	551-144	GIS Updates & Mapping Program	0.41	$6.28																				
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	0.43	$3.88																				
WWU	551-410	Herring Run Interceptor improvements	0.59	$3.81																				
WWU	551-569	Urgent Need Sanitary Design Services	0.38	$21.63																				
WWU	551-609	SW Diversion Pressure Sewer Improvements	0.45	$13.48																				
WWU	551-611	Low Level Sewershed Improvements	0.58	$83.21	CD	CD	CD	CD	CD	CD	CD	CD	CD											
WWU	551-612	Outfall Sewershed Improvements	0.53	$109.07	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD									
WWU	551-614	Dundalk Sewershed Improvements	0.57	$7.13	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	551-616	Patapsco Sewershed Improvements	0.56	$20.78	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	551-620	High LevelSewershed Improvements	0.61	$59.83	CD	CD	CD	CD	CD	CD	CD	CD	CD											
WWU	551-622	Gwynns FallsSewershed Improvements	0.56	$77.07	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	551-624	Herring Run Sewershed Improvements	0.62	$180.38	CD	CD	CD	CD	CD	CD	CD	CD	CD											
WWU	551-626	Jones Falls Sewershed Improvements	0.67	$85.00	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD										
WWU	551-627	Wet Weather Program Operation and Mgmt.	0.71	$8.70	CD	CD	CD	CD																
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	0.54	$27.50																				
WWF	551-526	Back River Digester Renovation SC-8526	0.19	$24.68																				
WWF	551-528	Patapsco ENR Denitrification and Nitrification	0.41	$11.67																				
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	0.25	$0.40																				
WWF	551-533	Annual Facilities Improvements	0.16	$4.50																				
WWF	551-533	Back River Facilities Improvements	0.17	$3.38																				
WWF	551-533	Patapsco Facilities Improvements	0.17	$5.67																				
WWF	551-557	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	0.34	$58.43																				
WWF	551-561	Back River Settling Tanks	0.23	$2.19																				
WWF	551-585	Pat LOX Plant Upgrade SC-868	0.23	$1.36																				
WWF	551-681	WW Facilities Security Improvements	0.16	$1.00																				
WWF	551-685	Back River Scum & Grease System	0.16	$2.77																				
WWF	551-687	Patapsco Chlorine Conversion SC-857	0.28	$1.36																				
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	0.39	$56.20	CD	CD	CD	CD																
WWF	551-692	Back River Electrical System Upgrade	0.19	$17.38																				
WWF	551-692	Patapsco Electrical System Upgrade	0.19	$21.86																				
WWF	551-752	McComas Street PS/FM Upgrade	0.26	$1.63																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WWF	551-755	Pump Station Force Main Improvements, various locations	0.25	$9.64																				
WWF	551-503: On Call	On-Call Engineering Services	0.08	$11.33																				
WWF	NEW	Optimization of Inventory Control	0.16	$2.33																				
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	0.11	$1.23																				
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	0.19	$2.43																				
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	0.17	$83.25																				
SWU	NEW	Representative Recurring Project: Conveyance	0.44	$338.69																				
SWF	NEW	Representative Recurring Project: Outfalls	0.50	$190.00																				
WU	NEW	Representative Recurring Project: Pipelines/Distribution System	0.00	$681.96																				
WF	NEW	Representative Recurring Project: Montebello 1 Membrane Filteration $60M	0.43	$78.95																				
WF	557-300	Representative Recurring Project: Montebello Generator $15M	0.45	$11.68																				
WF	NEW	Representative Recurring Project: Montebello Chemical Systems Upgrade $35M	0.43	$29.56																				
WF	NEW	Representative Recurring Project: Montebello Preliminary/Settling Upgrade $35M	0.47	$30.23																				
WF	NEW	Representative Recurring Project: Ashburton Recycle Facilities $30M	0.04	$44.27																				
WF	NEW	Representative Recurring Project: Ashburton Generator $10M	0.43	$13.75																				
WF	NEW	Representative Recurring Project: Ashburton Preliminary/Settling Upgrade $25M	0.45	$37.24																				
WF	NEW	Representative Recurring Project: Pumping Stations	0.37	$82.61																				
WF	NEW	Representative Recurring Project: Reservoirs & Tanks	0.52	$41.30																				
WWU	NEW	Representative Recurring Project: Collection System	0.40	$123.32																				
WWF	NEW	Representative Recurring Project: Patapsco Secondary Treatment Upgrades $50M	0.04	$23.14																				
WWF	NEW	Representative Recurring Project: Patapsco Sludge Digestion Facilities $50M	0.04	$19.13																				
WWF	NEW	Representative Recurring Project: Patapsco Green Energy $15M	0.06	$6.50																				
WWF	NEW	Representative Recurring Project: Patapsco Hypochlorite Generation Facility $25M	0.05	$10.59																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WWF	NEW	Representative Recurring Project: Patapsco Pelletization Facility Upgrade $40M	0.04	$17.16																				
WWF	NEW	Representative Recurring Project: Patapsco Chemical Facilities Upgrade $10M	0.06	$4.67																				
WWF	NEW	Representative Recurring Project: Back River Secondary Treatment Upgrades $75M	0.03	$55.87																				
WWF	NEW	Representative Recurring Project: Back River Egg-Shaped Digester Additions $75M	0.03	$55.87																				
WWF	NEW	Representative Recurring Project: Back River Sludge Storage Facility $25M	0.05	$16.94																				
WWF	NEW	Representative Recurring Project: Back River Pelletization Faciltiy Upgrade $60M	0.03	$40.57																				
WWF	NEW	Representative Recurring Project: Back River Hypochlorite Generation Facility $30M	0.05	$19.83																				
WWF	NEW	Representative Recurring Project: Back River Green Energy $15M	0.06	$10.16																				
WWF	NEW	Representative Recurring Project: Pumping Stations & Force Mains	0.02	$123.91																				

Table D.2, Scenario 1A Gantt Chart

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	0.67	$3.08																				
SWF	525-NEW	Stream Restoration TBD	0.64	$5.30																				
SWF	525-NEW	Moores Run Environmental Restoration Projects	0.60	$5.19																				
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	0.60	$3.45																				
SWF	525-NEW	Stony Run Environmental Restoration Projects	0.54	$4.00																				
SWF	525-405	ER4018 Powder Mill Run	0.53	$1.50																				
SWF	NEW	Representative Recurring Project: Outfalls	0.50	$955.94																				
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	0.50	$1.22																				
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	0.45	$1.22																				
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	0.45	$1.68																				
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	0.44	$6.72																				
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	0.44	$3.36																				
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	0.44	$3.36																				
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	0.44	$1.29																				
SWF	525-NEW	Facility Greening Projects Jones Falls WS	0.44	$1.72																				
SWF	525-NEW	Facility Greening Projects Back River WS	0.44	$1.72																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	0.44	$0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	0.44	$0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	0.44	$0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	0.44	$0.88																				
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	0.44	$3.44																				
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	0.38	$1.74																				
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	0.37	$2.32																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	0.37	$1.16																				
SWF	525-449	ER4016 Bush Street Debris Collector	0.36	$3.05																				
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	0.35	$0.70																				
SWU	NEW	Harris Creek Storm Drainage	0.50	$4.90																				
SWU	520-NEW	Patapsco Avenue Drainage Improvement	0.44	$4.52																				
SWU	NEW	Representative Recurring Project: Conveyance	0.44	$1704.08																				
SWU	520-NEW	North Point Road Drainage Improvement	0.44	$4.48																				
SWU	520-NEW	2300 Block Seamon Ave	0.44	$0.30																				
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	0.44	$0.43																				
SWU	520-102	Small Storm Drain and Inlet Repair	0.40	$22.20																				
SWU	520-093	Race Street Box Culvert	0.39	$3.50																				
SWU	520-708	Storm Water Pumping Station Improvements Highland Town	0.38	$1.63																				
SWU	520-715	Northeast Baltimore Drainage Improvements	0.38	$3.20																				
SWU	520-451	Fairmount Storm Drain Improvements	0.35	$1.85																				
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	0.28	$4.00																				
WF	557-928	Urgent needs - Water Facilities Engineering	0.55	$0.75																				
WF	NEW	Water Recycling and Solids Handling - Ashburton	0.53	$9.55																				
WF	557-715	UV disinfection - Ashburton FW Reservoir	0.52	$22.62																				
WF	557-716	UV disinfection - Druid Lake FW Reservoir	0.52	$25.08																				
WF	NEW	Representative Recurring Project: Reservoirs & Tanks	0.52	$207.81																				
WF	NEW	Preventive Maintenace Program	0.50	$3.00																				
WF	557-573	Raw water Tunnel Inspections	0.50	$0.50																				
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	0.47	$8.69																				
WF	557-713	Finished Water Improvements - Towson FW Reservoir	0.47	$3.47																				
WF	NEW	Representative Recurring Project: Montebello Preliminary/Settling Upgrade $35M	0.47	$152.10																				
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	0.46	$13.59																				
WF	NEW	Representative Recurring Project: Ashburton Preliminary/Settling Upgrade $25M	0.45	$187.38																				
WF	557-300	Representative Recurring Project: Montebello Generator $15M	0.45	$58.75																				
WF	NEW	Representative Recurring Project: Montebello Chemical Systems Upgrade $35M	0.43	$148.73																				
WF	NEW	Representative Recurring Project: Montebello 1	0.43	$397.22																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
		Membrane Filteration $60M																						
WF	NEW	Representative Recurring Project: Ashburton Generator $10M	0.43	$69.20																				
WF	557-068	Pretty Boy Reservoir - Roads & Culvert repair	0.42	$6.74																				
WF	557-068	Liberty Reservoir - Roads & Culvert repair	0.42	$3.32																				
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	0.41	$6.81																				
WF	557-927	Ashburton Chemical Laboratory	0.41	$2.38																				
WF	557-068	Loch Raven - Roads & Culvert repair	0.41	$3.96																				
WF	557-924	Pikesville Pump Station Rehabilitation	0.40	$0.00																				
WF	557-926	Towson Pump Station Rehabilitation	0.40	$0.10																				
WF	557-696	Chlorine Handling Safety Improvements WC-1150	0.40	$29.92																				
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	0.40	$7.04																				
WF	557-922	Vernon Pump Station Rehabilitation	0.40	$11.13																				
WF	557-923	Cromwell Pump Station Rehabilitation	0.40	$7.12																				
WF	NEW	Representative Recurring Project: Inspection/Maintenance of PS'S	0.39	$890.94																				
WF	557-928	Ashburton Pump Station Rehabilitation	0.39	$18.13																				
WF	NEW	Staffing Needs	0.39	$0.50																				
WF	NEW	Representative Recurring Project: Pumping Stations	0.37	$415.63																				
WF	557-300	Urgent Needs Water Facilities - Annual Improvements	0.37	$21.72																				
WF	557-070	Watershed Bridge Repair	0.36	$26.43																				
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	0.36	$7.08																				
WF	557-158	Earthen Dam Improvement Program WC-1127	0.35	$3.69																				
WF	NEW	Water Supply Capacity Analysis	0.34	$129.35																				
WF	557-730	Fullerton Water Filtration Plant WC 1169	0.33	$237.79																				
WF	557-727	Deer Creek Pumping Station Improvements	0.30	$6.54																				
WF	557-312	Montebello WTP 1 & 2 Improvements	0.26	$89.25																				
WF	NEW	Montebello Washwater Lake Dredging & Remediation	0.26	$13.10																				
WF	NEW	Personnel training in Electrical and Instrumentation certification.	0.26	$0.30																				
WF	557-731	Montebello Water Recycle Program	0.21	$18.61																				
WF	557-921	Maint Bldg. Impr. At Liberty Dam WC 1207	0.20	$13.74																				
WF	NEW	Hydropower Study	0.19	$12.10																				
WF	NEW	Baltimore City Water Bottling - Feasibility Study	0.15	$12.10																				
WF	NEW	Representative Recurring Project: Ashburton	0.04	$222.73																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
		Recycle Facilities $30M																						
WU	557-101	Water Mains - Installation	0.62	$10.11																				
WU	557-687	Large Main Rehab & Replacement, PCCP	0.61	$0.15																				
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	0.61	$22.91																				
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	0.60	$21.28																				
WU	557-100	Water Infrastructure Rehabilitation	0.57	$329.32																				
WU	557-689	Urgent Needs Water Engineering Services	0.52	$4.72																				
WU	557-031	Water Distribution System - Improvements	0.47	$13.49																				
WU	NEW	Leak Detection & Rehab – Large mains	0.44	$1.50																				
WU	NEW	SCADA Upgrades	0.43	$5.28																				
WU	NEW	Water modeling	0.42	$17.23																				
WU	NEW	Large Valve Replacement	0.36	$2.94																				
WU	557-002	Water Utility Billing System	0.36	$12.50																				
WU	557-133	Meter Replacement Program	0.35	$96.05																				
WU	557-400	Valve and Hydrant Exercising - Annual	0.33	$0.74																				
WU	557-638	Water Audit	0.33	$9.55																				
WU	557-099	GIS Support and Improvements	0.32	$6.37																				
WU	557-130	Water System Cathodic Protection	0.30	$4.96																				
WU	NEW	Representative Recurring Project: Pipelines/Distribution System	0.00	$3431.22																				
WWF	551-528	Patapsco ENR Denitrification and Nitrification	0.41	$11.67																				
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	0.39	$56.20	CD	CD	CD	CD	CD	CD														
WWF	551-557	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	0.34	$58.43																				
WWF	551-687	Patapsco Chlorine Conversion SC-857	0.28	$1.36																				
WWF	551-752	McComas Street PS/FM Upgrade	0.26	$1.63																				
WWF	551-755	Pump Station Force Main Improvements, various locations	0.25	$9.64																				
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	0.25	$0.40																				
WWF	551-585	Pat LOX Plant Upgrade SC-868	0.23	$1.36																				
WWF	551-561	Back River Settling Tanks	0.23	$2.19																				
WWF	551-526	Back River Digester Renovation SC-8526	0.19	$24.68																				
WWF	551-692	Patapsco Electrical System Upgrade	0.19	$21.86																				
WWF	551-692	Back River Electrical System Upgrade	0.19	$17.38																				
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	0.19	$2.43																				
WWF	551-533	Patapsco Facilities Improvements	0.17	$5.67																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WWF	551-533	Back River Facilities Improvements	0.17	$3.38																				
WWF	551-685	Back River Scum & Grease System	0.16	$2.77																				
WWF	551-533	Annual Facilities Improvements	0.16	$4.50																				
WWF	NEW	Optimization of Inventory Control	0.16	$2.33																				
WWF	551-681	WW Facilities Security Improvements	0.16	$1.00																				
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	0.12	$118.69																				
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	0.11	$1.23																				
WWF	551-503: On Call	On-Call Engineering Services	0.06	$13.93																				
WWF	NEW	Representative Recurring Project: Patapsco Green Energy $15M	0.06	$32.72																				
WWF	NEW	Representative Recurring Project: Patapsco Chemical Facilities Upgrade $10M	0.06	$23.49																				
WWF	NEW	Representative Recurring Project: Back River Green Energy $15M	0.06	$51.13																				
WWF	NEW	Representative Recurring Project: Patapsco Hypochlorite Generation Facility $25M	0.05	$53.28																				
WWF	NEW	Representative Recurring Project: Back River Sludge Storage Facility $25M	0.05	$85.22																				
WWF	NEW	Representative Recurring Project: Back River Hypochlorite Generation Facility $30M	0.05	$99.79																				
WWF	NEW	Representative Recurring Project: Patapsco Pelletization Facility Upgrade $40M	0.04	$86.34																				
WWF	NEW	Representative Recurring Project: Patapsco Secondary Treatment Upgrades $50M	0.04	$116.44																				
WWF	NEW	Representative Recurring Project: Patapsco Sludge Digestion Facilities $50M	0.04	$96.27																				
WWF	NEW	Representative Recurring Project: Back River Pelletization Faciltiy Upgrade $60M	0.03	$204.11																				
WWF	NEW	Representative Recurring Project: Back River Secondary Treatment Upgrades $75M	0.03	$281.11																				
WWF	NEW	Representative Recurring Project: Back River Egg-Shaped Digester Additions $75M	0.03	$281.11																				
WWF	NEW	Representative Recurring Project: Pumping Stations & Force Mains	0.02	$623.44																				
WWU	551-627	Wet Weather Program Operation and Management	0.71	$8.70	CD	CD	CD	CD																
WWU	551-626	Jones Falls Sewershed Improvements	0.67	$85.00	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD										
WWU	551-620	High LevelSewershed Improvements	0.61	$59.83	CD	CD	CD	CD	CD	CD	CD	CD	CD											
WWU	551-410	Herring Run Interceptor improvements	0.59	$3.81																				
WWU	551-611	Low Level Sewershed Improvements	0.58	$83.21	CD	CD	CD	CD	CD	CD	CD	CD	CD											

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WWU	551-614	Dundalk Sewershed Improvements	0.57	$7.13	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	551-616	Patapsco Sewershed Improvements	0.56	$20.78	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	551-622	Gwynns FallsSewershed Improvements	0.56	$77.07	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	0.54	$27.50																				
WWU	551-624	Herring Run Sewershed Improvements	0.49	$228.50									CD	CD	CD	CD	CD	CD	CD	CD	CD			
WWU	551-609	SW Diversion Pressure Sewer Improvements	0.45	$13.48																				
WWU	551-612	Outfall Sewershed Improvements	0.43	$134.14								CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD		
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	0.43	$3.88																				
WWU	551-144	GIS Updates & Mapping Program	0.41	$6.28																				
WWU	NEW	Representative Recurring Project: Collection System	0.40	$620.49																				
WWU	551-569	Urgent Need Sanitary Design Services	0.38	$21.63																				

Table D.3, Scenario 1B Gantt Chart

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	0.67	$3.08																				
SWF	525-NEW	Stream Restoration TBD	0.64	$5.30																				
SWF	525-NEW	Moores Run Environmental Restoration Projects	0.60	$5.19																				
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	0.60	$3.45																				
SWF	525-NEW	Stony Run Environmental Restoration Projects	0.54	$4.00																				
SWF	525-405	ER4018 Powder Mill Run	0.53	$1.50																				
SWF	NEW	Representative Recurring Project: Outfalls	0.50	$796.62																				
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	0.50	$1.22																				
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	0.45	$1.22																				
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	0.45	$1.68																				
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	0.44	$6.72																				
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	0.44	$3.36																				
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	0.44	$3.36																				
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	0.44	$1.29																				
SWF	525-NEW	Facility Greening Projects Jones Falls WS	0.44	$1.72																				
SWF	525-NEW	Facility Greening Projects Back River WS	0.44	$1.72																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	0.44	$0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	0.44	$0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	0.44	$0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	0.44	$0.88																				
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	0.44	$3.44																				
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	0.38	$1.74																				
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	0.37	$2.32																				
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	0.37	$1.16																				
SWF	525-449	ER4016 Bush Street Debris Collector	0.36	$3.05																				
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	0.35	$0.70																				
SWU	520-NEW	Patapsco Avenue Drainage Improvement	0.44	$4.52																				
SWU	NEW	Representative Recurring Project: Conveyance	0.44	$1420.06																				
SWU	520-NEW	North Point Road Drainage Improvement	0.44	$4.48																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
SWU	520-NEW	2300 Block Seamon Ave	0.44	$0.30																				
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	0.44	$0.43																				
SWU	520-093	Race Street Box Culvert	0.39	$3.50																				
SWU	520-708	Storm Water Pumping Station Improvements Highland Town	0.38	$1.63																				
SWU	520-715	Northeast Baltimore Drainage Improvements	0.38	$3.20																				
SWU	NEW	Harris Creek Storm Drainage	0.37	$6.59																				
SWU	520-451	Fairmount Storm Drain Improvements	0.35	$1.85																				
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	0.28	$4.00																				
WF	557-928	Urgent needs - Water Facilities Engineering	0.55	$0.75																				
WF	NEW	Representative Recurring Project: Reservoirs & Tanks	0.52	$173.18																				
WF	NEW	Preventive Maintenace Program	0.50	$3.00																				
WF	557-573	Raw water Tunnel Inspections	0.50	$0.50																				
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	0.47	$8.69																				
WF	557-713	Finished Water Improvements - Towson FW Reservoir	0.47	$3.47																				
WF	NEW	Representative Recurring Project: Montebello Preliminary/Settling Upgrade $35M	0.47	$126.75																				
WF	NEW	Representative Recurring Project: Ashburton Preliminary/Settling Upgrade $25M	0.45	$156.15																				
WF	557-300	Representative Recurring Project: Montebello Generator $15M	0.45	$48.96																				
WF	NEW	Representative Recurring Project: Montebello Chemical Systems Upgrade $35M	0.43	$123.94																				
WF	NEW	Representative Recurring Project: Montebello 1 Membrane Filteration $60M	0.43	$331.02																				
WF	NEW	Representative Recurring Project: Ashburton Generator $10M	0.43	$57.67																				
WF	557-730	Fullerton Water Filtration Plant WC 1169	0.43	$182.25																				
WF	557-068	Pretty Boy Reservoir - Roads & Culvert repair	0.42	$6.74																				
WF	557-068	Liberty Reservoir - Roads & Culvert repair	0.42	$3.32																				
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	0.41	$6.81																				
WF	557-927	Ashburton Chemical Laboratory	0.41	$2.38																				
WF	557-068	Loch Raven - Roads & Culvert repair	0.41	$3.96																				
WF	557-924	Pikesville Pump Station Rehabilitation	0.40	$0.00																				
WF	557-926	Towson Pump Station Rehabilitation	0.40	$0.10																				
WF	557-922	Vernon Pump Station Rehabilitation	0.40	$11.13																				
WF	557-923	Cromwell Pump Station Rehabilitation	0.40	$7.12																				
WF	NEW	Representative Recurring Project: Inspection/Maintenance of PS'S	0.39	$742.45																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WF	NEW	Water Recycling and Solids Handling - Ashburton	0.39	$12.83																				
WF	NEW	Staffing Needs	0.39	$0.50																				
WF	557-715	UV disinfection - Ashburton FW Reservoir	0.38	$31.31																				
WF	NEW	Representative Recurring Project: Pumping Stations	0.37	$346.36																				
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	0.36	$7.08																				
WF	557-158	Earthen Dam Improvement Program WC-1127	0.35	$3.69																				
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	0.31	$19.96																				
WF	557-727	Deer Creek Pumping Station Improvements	0.30	$6.54																				
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	0.29	$9.46																				
WF	NEW	Personnel training in Electrical and Instrumentation certification.	0.26	$0.30																				
WF	NEW	Montebello Washwater Lake Dredging & Remediation	0.24	$13.90																				
WF	NEW	Representative Recurring Project: Ashburton Recycle Facilities $30M	0.04	$185.61																				
WU	557-101	Water Mains - Installation	0.62	$10.11																				
WU	557-687	Large Main Rehab & Replacement, PCCP	0.61	$0.15																				
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	0.61	$22.91																				
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	0.60	$21.28																				
WU	557-100	Water Infrastructure Rehabilitation	0.57	$329.32																				
WU	557-689	Urgent Needs Water Engineering Services	0.52	$4.72																				
WU	557-031	Water Distribution System - Improvements	0.47	$13.49																				
WU	NEW	Leak Detection & Rehab – Large mains	0.44	$1.50																				
WU	NEW	Large Valve Replacement	0.36	$2.94																				
WU	557-002	Water Utility Billing System	0.36	$12.50																				
WU	557-133	Meter Replacement Program	0.34	$98.93																				
WU	557-400	Valve and Hydrant Exercising - Annual	0.33	$0.74																				
WU	557-638	Water Audit	0.33	$9.55																				
WU	NEW	SCADA Upgrades	0.32	$7.10																				
WU	557-130	Water System Cathodic Protection	0.30	$4.96																				
WU	NEW	Representative Recurring Project: Pipelines/Distribution System	0.00	$2859.35																				
WWF	551-528	Patapsco ENR Denitrification and Nitrification	0.41	$11.67																				
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	0.39	$56.20	CD	CD	CD	CD	CD	CD														
WWF	551-687	Patapsco Chlorine Conversion SC-857	0.28	$1.36																				
WWF	551-752	McComas Street PS/FM Upgrade	0.26	$1.63																				
WWF	551-755	Pump Station Force Main Improvements, various locations	0.25	$9.64																				
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	0.25	$0.40																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WWF	551-585	Pat LOX Plant Upgrade SC-868	0.23	$1.36																				
WWF	551-561	Back River Settling Tanks	0.23	$2.19																				
WWF	551-526	Back River Digester Renovation SC-8526	0.19	$24.68																				
WWF	551-692	Patapsco Electrical System Upgrade	0.19	$21.86																				
WWF	551-692	Back River Electrical System Upgrade	0.18	$18.43																				
WWF	551-533	Back River Facilities Improvements	0.17	$3.38																				
WWF	551-685	Back River Scum & Grease System	0.16	$2.77																				
WWF	551-533	Annual Facilities Improvements	0.16	$4.50																				
WWF	NEW	Optimization of Inventory Control	0.16	$2.33																				
WWF	551-681	WW Facilities Security Improvements	0.16	$1.00																				
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	0.14	$3.26																				
WWF	551-533	Patapsco Facilities Improvements	0.13	$7.62																				
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	0.11	$1.23																				
WWF	NEW	Representative Recurring Project: Patapsco Green Energy $15M	0.06	$27.27																				
WWF	NEW	Representative Recurring Project: Patapsco Chemical Facilities Upgrade $10M	0.06	$19.57																				
WWF	NEW	Representative Recurring Project: Back River Green Energy $15M	0.06	$42.61																				
WWF	NEW	Representative Recurring Project: Patapsco Hypochlorite Generation Facility $25M	0.05	$44.40																				
WWF	NEW	Representative Recurring Project: Back River Sludge Storage Facility $25M	0.05	$71.01																				
WWF	NEW	Representative Recurring Project: Back River Hypochlorite Generation Facility $30M	0.05	$83.16																				
WWF	NEW	Representative Recurring Project: Patapsco Pelletization Facility Upgrade $40M	0.04	$71.95																				
WWF	NEW	Representative Recurring Project: Patapsco Secondary Treatment Upgrades $50M	0.04	$97.03																				
WWF	NEW	Representative Recurring Project: Patapsco Sludge Digestion Facilities $50M	0.04	$80.22																				
WWF	NEW	Representative Recurring Project: Back River Pelletization Faciltiy Upgrade $60M	0.03	$170.09																				
WWF	NEW	Representative Recurring Project: Back River Egg-Shaped Digester Additions $75M	0.03	$234.26																				
WWF	NEW	Representative Recurring Project: Back River Secondary Treatment Upgrades $75M	0.03	$234.26																				
WWF	NEW	Representative Recurring Project: Pumping Stations & Force Mains	0.02	$519.54																				
WWU	551-627	Wet Weather Program Operation and Management	0.71	$8.70	CD	CD	CD	CD																
WWU	551-410	Herring Run Interceptor improvements	0.59	$3.81																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WWU	551-611	Low Level Sewershed Improvements	0.58	$83.21	CD	CD	CD	CD	CD	CD	CD	CD	CD											
WWU	551-616	Patapsco Sewershed Improvements	0.56	$20.78	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	551-622	Gwynns FallsSewershed Improvements	0.56	$77.07	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	0.54	$27.50																				
WWU	551-612	Outfall Sewershed Improvements	0.53	$109.07	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD									
WWU	551-626	Jones Falls Sewershed Improvements	0.50	$114.23											CD	CD	CD	CD	CD	CD	CD	CD	CD	CD
WWU	551-624	Herring Run Sewershed Improvements	0.47	$235.35										CD	CD	CD	CD	CD	CD	CD	CD	CD		
WWU	551-609	SW Diversion Pressure Sewer Improvements	0.45	$13.48																				
WWU	551-620	High LevelSewershed Improvements	0.44	$82.82												CD	CD	CD	CD	CD	CD	CD	CD	CD
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	0.43	$3.88																				
WWU	551-614	Dundalk Sewershed Improvements	0.42	$9.58											CD	CD	CD	CD	CD	CD	CD	CD		
WWU	551-144	GIS Updates & Mapping Program	0.41	$6.28																				
WWU	NEW	Representative Recurring Project: Collection System	0.40	$517.08																				

Table D.4, Scenario 1C Gantt Chart

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	0.67	3.08																				
SWF	525-NEW	Stream Restoration TBD	0.64	5.30																				
SWF	525-NEW	Moores Run Environmental Restoration Projects	0.60	5.19																				
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	0.60	3.45																				
SWF	525-NEW	Stony Run Environmental Restoration Projects	0.54	4.00																				
SWF	525-405	ER4018 Powder Mill Run	0.53	1.50																				
SWF	NEW	Representative Recurring Project: Outfalls	0.50	637.30																				
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	0.50	1.22																				
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	0.45	1.22																				
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	0.45	1.68																				
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	0.44	6.72																				
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	0.44	3.36																				
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	0.44	3.36																				
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	0.44	1.29																				
SWF	525-NEW	Facility Greening Projects Jones Falls WS	0.44	1.72																				
SWF	525-NEW	Facility Greening Projects Back River WS	0.44	1.72																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	0.44	0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	0.44	0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	0.44	0.44																				
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	0.44	0.88																				
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	0.44	3.44																				
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	0.38	1.74																				
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	0.37	2.32																				
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	0.37	1.16																				
SWF	525-449	ER4016 Bush Street Debris Collector	0.36	3.05																				
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	0.35	0.70																				
SWU	NEW	Harris Creek Storm Drainage	0.50	4.90																				
SWU	520-NEW	Patapsco Avenue Drainage Improvement	0.44	4.52																				
SWU	NEW	Representative Recurring Project: Conveyance	0.44	1,136.05																				
SWU	520-NEW	North Point Road Drainage Improvement	0.44	4.48																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
SWU	520-NEW	2300 Block Seamon Ave	0.44	0.30																				
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	0.44	0.43																				
SWU	520-102	Small Storm Drain and Inlet Repair	0.40	22.20																				
SWU	520-093	Race Street Box Culvert	0.39	3.50																				
SWU	520-708	Storm Water Pumping Station Improvements Highland Town	0.38	1.63																				
SWU	520-715	Northeast Baltimore Drainage Improvements	0.38	3.20																				
SWU	520-451	Fairmount Storm Drain Improvements	0.35	1.85																				
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	0.28	4.00																				
WF	557-928	Urgent needs - Water Facilities Engineering	0.55	0.75																				
WF	NEW	Water Recycling and Solids Handling - Ashburton	0.53	9.55																				
WF	557-715	UV disinfection - Ashburton FW Reservoir	0.52	22.62																				
WF	557-716	UV disinfection - Druid Lake FW Reservoir	0.52	25.08																				
WF	NEW	Representative Recurring Project: Reservoirs & Tanks	0.52	138.54																				
WF	NEW	Preventive Maintenace Program	0.50	3.00																				
WF	557-573	Raw water Tunnel Inspections	0.50	0.50																				
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	0.47	8.69																				
WF	557-713	Finished Water Improvements - Towson FW Reservoir	0.47	3.47																				
WF	NEW	Representative Recurring Project: Montebello Preliminary/Settling Upgrade $35M	0.47	101.40																				
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	0.46	13.59																				
WF	NEW	Representative Recurring Project: Ashburton Preliminary/Settling Upgrade $25M	0.45	124.92																				
WF	557-300	Representative Recurring Project: Montebello Generator $15M	0.45	39.17																				
WF	NEW	Representative Recurring Project: Montebello Chemical Systems Upgrade $35M	0.43	99.15																				
WF	NEW	Representative Recurring Project: Montebello 1 Membrane Filteration $60M	0.43	264.82																				
WF	NEW	Representative Recurring Project: Ashburton Generator $10M	0.43	46.14																				
WF	557-068	Pretty Boy Reservoir - Roads & Culvert repair	0.42	6.74																				
WF	557-068	Liberty Reservoir - Roads & Culvert repair	0.42	3.32																				
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	0.41	6.81																				
WF	557-927	Ashburton Chemical Laboratory	0.41	2.38																				
WF	557-068	Loch Raven - Roads & Culvert repair	0.41	3.96																				
WF	557-924	Pikesville Pump Station Rehabilitation	0.40	0.00																				
WF	557-926	Towson Pump Station Rehabilitation	0.40	0.10																				
WF	557-696	Chlorine Handling Safety Improvements WC-1150	0.40	29.92																				
WF	557-922	Vernon Pump Station Rehabilitation	0.40	11.13																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WF	557-923	Cromwell Pump Station Rehabilitation	0.40	7.12																				
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	0.40	7.04																				
WF	NEW	Representative Recurring Project: Inspection/Maintenance of PS'S	0.39	$593.96																				
WF	557-928	Ashburton Pump Station Rehabilitation	0.39	$18.13																				
WF	NEW	Staffing Needs	0.39	$0.50																				
WF	NEW	Representative Recurring Project: Pumping Stations	0.37	$277.09																				
WF	557-300	Urgent Needs Water Facilities - Annual Improvements	0.37	$21.72																				
WF	557-070	Watershed Bridge Repair	0.36	$26.43																				
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	0.36	$7.08																				
WF	557-158	Earthen Dam Improvement Program WC-1127	0.35	$3.69																				
WF	NEW	Water Supply Capacity Analysis	0.34	$129.35																				
WF	557-730	Fullerton Water Filtration Plant WC 1169	0.33	$237.79																				
WF	557-727	Deer Creek Pumping Station Improvements	0.30	$6.54																				
WF	557-312	Montebello WTP 1 & 2 Improvements	0.28	$81.68																				
WF	NEW	Montebello Washwater Lake Dredging & Remediation	0.26	$13.10																				
WF	NEW	Personnel training in Electrical and Instrumentation certification.	0.26	$0.30																				
WF	557-731	Montebello Water Recycle Program	0.21	$18.61																				
WF	557-921	Maint Bldg. Impr. At Liberty Dam WC 1207	0.20	$13.74																				
WF	NEW	Hydropower Study	0.19	$12.10																				
WF	NEW	Baltimore City Water Bottling - Feasibility Study	0.12	$15.33																				
WF	NEW	Representative Recurring Project: Ashburton Recycle Facilities $30M	0.04	$148.49																				
WU	557-101	Water Mains - Installation	0.62	$10.11																				
WU	557-687	Large Main Rehab & Replacement, PCCP	0.61	$0.15																				
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	0.61	$22.91																				
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	0.60	$21.28																				
WU	557-100	Water Infrastructure Rehabilitation	0.57	$329.32																				
WU	557-689	Urgent Needs Water Engineering Services	0.52	$4.72																				
WU	557-031	Water Distribution System - Improvements	0.47	$13.49																				
WU	NEW	Leak Detection & Rehab – Large mains	0.44	$1.50																				
WU	NEW	SCADA Upgrades	0.43	$5.28																				
WU	NEW	Water modeling	0.42	$17.23																				
WU	NEW	Large Valve Replacement	0.36	$2.94																				
WU	557-002	Water Utility Billing System	0.36	$12.50																				
WU	557-400	Valve and Hydrant Exercising - Annual	0.33	$0.74																				
WU	557-638	Water Audit	0.33	$9.55																				
WU	557-133	Meter Replacement Program	0.32	$104.95																				
WU	557-099	GIS Support and Improvements	0.32	$6.37																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WU	557-130	Water System Cathodic Protection	0.30	$4.96																				
WU	NEW	Representative Recurring Project: Pipelines/Distribution System	0.00	$2287.48																				
WWF	551-528	Patapsco ENR Denitrification and Nitrification	0.41	$11.67																				
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	0.39	$56.20	CD	CD	CD	CD	CD	CD														
WWF	551-557	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	0.32	$61.99																				
WWF	551-687	Patapsco Chlorine Conversion SC-857	0.28	$1.36																				
WWF	551-752	McComas Street PS/FM Upgrade	0.26	$1.63																				
WWF	551-755	Pump Station Force Main Improvements, various locations	0.25	$9.64																				
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	0.25	$0.40																				
WWF	551-585	Pat LOX Plant Upgrade SC-868	0.23	$1.36																				
WWF	551-561	Back River Settling Tanks	0.23	$2.19																				
WWF	551-526	Back River Digester Renovation SC-8526	0.19	$24.68																				
WWF	551-692	Patapsco Electrical System Upgrade	0.19	$21.86																				
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	0.19	$2.43																				
WWF	551-692	Back River Electrical System Upgrade	0.18	$18.43																				
WWF	551-533	Patapsco Facilities Improvements	0.17	$5.67																				
WWF	551-533	Back River Facilities Improvements	0.17	$3.38																				
WWF	551-685	Back River Scum & Grease System	0.16	$2.77																				
WWF	551-533	Annual Facilities Improvements	0.16	$4.50																				
WWF	NEW	Optimization of Inventory Control	0.16	$2.33																				
WWF	551-681	WW Facilities Security Improvements	0.16	$1.00																				
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	0.13	$108.62																				
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	0.11	$1.23																				
WWF	551-503: On Call	On-Call Engineering Services	0.06	$13.93																				
WWF	NEW	Representative Recurring Project: Patapsco Green Energy $15M	0.06	$21.81																				
WWF	NEW	Representative Recurring Project: Patapsco Chemical Facilities Upgrade $10M	0.06	$15.66																				
WWF	NEW	Representative Recurring Project: Back River Green Energy $15M	0.06	$34.09																				
WWF	NEW	Representative Recurring Project: Patapsco Hypochlorite Generation Facility $25M	0.05	$35.52																				
WWF	NEW	Representative Recurring Project: Back River Sludge Storage Facility $25M	0.05	$56.81																				
WWF	NEW	Representative Recurring Project: Back River Hypochlorite Generation Facility $30M	0.05	$66.53																				
WWF	NEW	Representative Recurring Project: Patapsco Pelletization Facility Upgrade $40M	0.04	$57.56																				

Project Type	CIP Number	Project	Total Weighted Score	Total Cost in Study Period to City (M)	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
WWF	NEW	Representative Recurring Project: Patapsco Secondary Treatment Upgrades $50M	0.04	$77.62																				
WWF	NEW	Representative Recurring Project: Patapsco Sludge Digestion Facilities $50M	0.04	$64.18																				
WWF	NEW	Representative Recurring Project: Back River Pelletization Faciltiy Upgrade $60M	0.03	$136.08																				
WWF	NEW	Representative Recurring Project: Back River Egg-Shaped Digester Additions $75M	0.03	$187.41																				
WWF	NEW	Representative Recurring Project: Back River Secondary Treatment Upgrades $75M	0.03	$187.41																				
WWF	NEW	Representative Recurring Project: Pumping Stations & Force Mains	0.02	$415.63																				
WWU	551-627	Wet Weather Program Operation and Management	0.71	$8.70	CD	CD	CD	CD																
WWU	551-626	Jones Falls Sewershed Improvements	0.67	$85.00	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD										
WWU	551-620	High LevelSewershed Improvements	0.61	$59.83	CD	CD	CD	CD	CD	CD	CD	CD	CD											
WWU	551-410	Herring Run Interceptor improvements	0.59	$3.81																				
WWU	551-611	Low Level Sewershed Improvements	0.58	$83.21	CD	CD	CD	CD	CD	CD	CD	CD	CD											
WWU	551-614	Dundalk Sewershed Improvements	0.57	$7.13	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	551-616	Patapsco Sewershed Improvements	0.56	$20.78	CD	CD	CD	CD	CD	CD	CD	CD												
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	0.54	$27.50																				
WWU	551-622	Gwynns FallsSewershed Improvements	0.54	$79.38		CD	CD	CD	CD	CD	CD	CD	CD											
WWU	551-624	Herring Run Sewershed Improvements	0.50	$221.84								CD	CD	CD	CD	CD	CD	CD	CD	CD				
WWU	551-612	Outfall Sewershed Improvements	0.47	$122.76					CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD					
WWU	551-609	SW Diversion Pressure Sewer Improvements	0.45	$13.48																				
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	0.43	$3.88																				
WWU	551-144	GIS Updates & Mapping Program	0.41	$6.28																				
WWU	NEW	Representative Recurring Project: Collection System	0.40	$413.66																				
WWU	551-569	Urgent Need Sanitary Design Services	0.38	$21.63																				

APPENDIX E

BENEFITS QUANTIFICATION FOR THE STATUS QUO

Appendix E, Benefits Quantification for the Status Quo

Table E.1, Benefits Quantification for the Status Quo

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
SWU	520-102	Small Storm Drain and Inlet Repair	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	27.33	6.67	6.67	6.67	6.67	6.67	-	-	-	-	-	-	-	-	68.00
SWU	520-093	Race Street Box Culvert	34.27	5.27	5.27	5.27	5.27	5.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.60
SWU	520-715	Northeast Baltimore Drainage Improvements	-	3.00	3.00	24.87	5.27	5.27	5.27	5.27	5.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57.20
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	3.33	3.33	27.70	7.77	7.77	7.77	7.77	7.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73.20
SWU	520-708	Storm Water Pumping Station Improvements Highland Town	41.35	4.75	4.75	4.75	4.75	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65.10
SWU	520-451	Fairmount Storm Drain Improvements	5.50	27.23	5.13	5.13	5.13	5.13	5.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.40
SWU	520-NEW	Patapsco Avenue Drainage Improvement	2.50	2.50	2.50	2.50	20.13	7.63	7.63	7.63	7.63	7.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.30
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	2.50	2.50	2.50	23.82	4.72	4.72	4.72	4.72	4.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54.90
SWU	520-NEW	North Point Road Drainage Improvement	3.00	3.00	30.77	7.77	7.77	7.77	7.77	7.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.60
SWU	520-NEW	2300 Block Seamon Ave	5.00	32.63	7.63	7.63	7.63	7.63	7.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.80
SWU	NEW	Harris Creek Storm Drainage	-	1.43	1.43	1.43	1.43	1.43	1.43	35.76	8.33	8.33	8.33	8.33	8.33	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	4.38	4.38	4.38	32.46	8.08	8.08	8.08	8.08	8.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	4.75	4.75	4.75	40.33	15.58	15.58	15.58	15.58	15.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	132.50
SWF	525-405	ER4018 Powder Mill Run	-	10.00	40.58	10.58	10.58	10.58	10.58	10.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103.50
SWF	525-449	ER4016 Bush Street Debris Collector	6.33	6.33	30.83	4.50	4.50	4.50	4.50	4.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.00
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	-	-	8.75	38.33	9.58	9.58	9.58	9.58	9.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95.00
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	4.13	4.13	4.13	37.71	13.58	13.58	13.58	13.58	13.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118.00
SWF	525-NEW	Stony Run Environmental Restoration Projects	4.38	4.38	4.38	35.46	11.08	11.08	11.08	11.08	11.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104.00
SWF	525-NEW	Moores Run Environmental Restoration Projects	2.92	2.92	2.92	2.92	2.92	36.67	13.75	13.75	13.75	13.75	13.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120.00
SWF	525-NEW	Stream Restoration TBD	3.50	3.50	3.50	3.50	28.25	14.75	14.75	14.75	14.75	14.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	116.00
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	5.83	5.83	26.93	4.50	4.50	4.50	4.50	4.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61.10
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	2.92	2.92	2.92	2.92	2.92	24.43	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.60
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	-	-	4.00	4.00	4.00	4.00	25.52	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	66.10
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	-	-	-	4.38	4.38	4.38	25.89	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	63.60
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	3.50	3.50	3.50	3.50	22.17	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.50

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	-	-	5.83	5.83	24.50	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.50
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	-	-	5.50	5.50	24.17	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.50
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	-	-	4.13	4.13	4.13	32.79	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88.50
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	4.13	4.13	4.13	32.38	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	-	4.38	4.38	4.38	22.63	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77.00
SWF	525-NEW	Facility Greening Projects Jones Falls WS	-	-	5.83	5.83	24.08	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77.00
SWF	525-NEW	Facility Greening Projects Back River WS	-	-	-	5.83	5.83	34.08	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	8.75	32.77	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	8.75	32.77	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	4.38	4.38	4.38	28.39	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	-	4.38	4.38	4.38	18.39	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.60
WU	557-002	Water Utility Billing System	-	2.00	2.00	2.00	2.00	25.43	5.43	5.43	5.43	5.43	5.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.60
WU	557-031	Water Distribution System - Improvements	1.80	1.80	1.80	1.80	19.98	8.18	8.18	8.18	8.18	8.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.10
WU	557-099	GIS Support and Improvements	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	14.54	4.67	4.67	4.67	4.67	4.67	-	-	-	-	-	-	-	47.10
WU	557-100	Water Infrastructure Rehabilitation	1.50	1.50	1.50	1.50	22.60	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84.10
WU	557-101	Water Mains - Installation	3.13	3.13	3.13	34.23	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99.10
WU	557-130	Water System Cathodic Protection	2.00	2.00	2.00	2.00	15.33	3.33	3.33	3.33	3.33	3.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40.00
WU	557-133	Meter Replacement Program	3.33	3.33	26.03	6.10	6.10	6.10	6.10	6.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.20
WU	557-400	Valve and Hydrant Exercising - Annual	3.67	3.67	23.00	4.33	4.33	4.33	4.33	4.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.00
WU	557-638	Water Audit	2.25	2.25	2.25	18.60	4.75	4.75	4.75	4.75	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.10
WU	557-689	Urgent Needs Water Engineering Services	1.67	1.67	1.67	1.67	1.67	29.88	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.30
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	2.10	2.10	2.10	2.10	23.20	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.10
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	3.50	3.50	34.05	10.55	10.55	10.55	10.55	10.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93.80
WU	NEW	Large Valve Replacement	1.67	1.67	1.67	1.67	1.67	22.60	4.33	4.33	4.33	4.33	4.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.60
WU	NEW	SCADA Upgrades	1.29	1.29	1.29	1.29	1.29	1.29	27.29	6.00	6.00	6.00	6.00	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	65.00
WU	NEW	Water modeling	1.29	1.29	1.29	1.29	1.29	1.29	23.89	6.00	6.00	6.00	6.00	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	61.60
WU	NEW	Leak Detection & Rehab – Large mains	1.57	1.57	1.57	1.57	1.57	1.57	23.39	7.22	7.22	7.22	7.22	7.22	-	-	-	-	-	-	-	-	-	-	-	-	-	68.90
WU	557-687	Large Main Rehab & Replacement, PCCP	2.07	2.07	2.07	2.07	2.07	2.07	32.62	10.55	10.55	10.55	10.55	10.55	-	-	-	-	-	-	-	-	-	-	-	-	-	97.80
WF	557-068	Loch Raven - Roads & Culvert repair	2.50	2.50	2.50	29.33	6.83	6.83	6.83	6.83	6.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.00

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WF	557-068	Pretty Boy Reservoir - Roads & Culvert repair	3.33	3.33	30.72	7.38	7.38	7.38	7.38	7.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.30
WF	557-068	Liberty Reservoir - Roads & Culvert repair	3.33	3.33	30.72	7.38	7.38	7.38	7.38	7.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.30
WF	557-070	Watershed Bridge Repair	1.64	1.64	1.64	1.64	1.64	1.64	20.53	5.58	5.58	5.58	5.58	5.58	-	-	-	-	-	-	-	-	-	-	-	-	-	58.30
WF	557-158	Earthen Dam Improvement Program WC-1127	2.50	2.50	2.50	2.50	23.50	5.00	5.00	5.00	5.00	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.50
WF	557-300	Urgent Needs Water Facilities - Annual Improvements	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	26.04	5.17	5.17	5.17	5.17	5.17	-	-	-	-	-	-	-	-	-	-	-	62.10
WF	557-312	Montebello WTP 1 & 2 Improvements	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	22.32	4.33	4.33	4.33	4.33	4.33	-	-	-	-	-	-	-	54.60
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	2.50	2.50	2.50	2.50	17.27	8.47	8.47	8.47	8.47	8.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69.60
WF	557-696	Chlorine Handling Safety Improvements WC-1150	1.64	1.64	1.64	1.64	1.64	1.64	24.46	7.72	7.72	7.72	7.72	7.72	-	-	-	-	-	-	-	-	-	-	-	-	-	72.90
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	2.70	2.70	2.70	2.70	24.22	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76.10
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	1.64	1.64	1.64	1.64	1.64	1.64	25.66	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	76.60
WF	557-713	Finished Water Improvements - Towson FW Reservoir	3.13	3.13	3.13	27.14	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77.60
WF	557-715	UV disinfection - Ashburton FW Reservoir	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	36.13	9.85	9.85	9.85	9.85	9.85	-	-	-	-	-	-	-	-	-	-	-	95.60
WF	557-716	UV disinfection - Druid Lake FW Reservoir	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	36.13	9.85	9.85	9.85	9.85	9.85	-	-	-	-	-	-	-	-	-	-	-	95.60
WF	557-727	Deer Creek Pumping Station Improvements	3.38	3.38	3.38	24.21	5.83	5.83	5.83	5.83	5.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.50
WF	557-730	Fullerton Water Filtration Plant WC 1169	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	23.93	8.88	8.88	8.88	8.88	8.88	-	-	-	-	-	-	-	-	-	-	79.60
WF	557-731	Montebello Water Recycle Program	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	6.91	5.63	5.63	5.63	5.63	5.63	-	-	-	-	-	-	-	-	-	-	-	45.30
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	2.50	2.50	2.50	2.50	19.82	4.02	4.02	4.02	4.02	4.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.90
WF	557-921	Maint Bldg. Impr. At Liberty Dam WC 1207	1.79	1.79	1.79	1.79	1.79	1.79	12.89	3.60	3.60	3.60	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	41.60
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	1.64	1.64	1.64	1.64	1.64	1.64	31.19	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	73.80
WF	557-922	Vernon Pump Station Rehabilitation	2.30	2.30	2.30	2.30	21.85	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.80
WF	557-923	Cromwell Pump Station Rehabilitation	2.30	2.30	2.30	2.30	21.85	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.80
WF	557-924	Pikesville Pump Station Rehabilitation	2.08	2.08	2.08	2.08	2.08	31.63	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.80
WF	557-926	Towson Pump Station Rehabilitation	-	2.08	2.08	2.08	2.08	2.08	31.63	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	74.80
WF	557-928	Ashburton Pump Station Rehabilitation	1.64	1.64	1.64	1.64	1.64	1.64	31.19	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	73.80
WF	557-927	Ashburton Chemical Laboratory	-	-	-	-	-	-	2.50	2.50	2.50	2.50	22.27	8.47	8.47	8.47	8.47	8.47	-	-	-	-	-	-	-	-	-	74.60
WF	557-928	Urgent needs - Water Facilities Engineering	4.17	4.17	38.38	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.80
WF	557-573	Raw water Tunnel Inspections	-	-	4.17	4.17	20.18	9.72	9.72	9.72	9.72	9.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77.10
WF	NEW	Water Recycling and Solids Handling - Ashburton	-	-	-	-	1.56	1.56	1.56	1.56	1.56	1.56	1.56	33.05	8.88	8.88	8.88	8.88	8.88	-	-	-	-	-	-	-	-	88.40
WF	NEW	Inspection/Maintenance of PS'S	-	-	-	-	-	-	1.64	1.64	1.64	1.64	1.64	1.64	21.16	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	72.10

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WF	NEW	Personnel training in Electrical and Instrumentation certification.	-	1.67	1.67	1.67	1.67	1.67	11.72	3.75	3.75	3.75	3.75	3.75	-	-	-	-	-	-	-	-	-	-	-	-	-	38.80
WF	NEW	Staffing Needs	-	1.67	1.67	1.67	1.67	1.67	19.30	6.33	6.33	6.33	6.33	6.33	-	-	-	-	-	-	-	-	-	-	-	-	-	59.30
WF	NEW	Preventive Maintenace Program	-	1.83	1.83	1.83	1.83	1.83	29.77	8.33	8.33	8.33	8.33	8.33	-	-	-	-	-	-	-	-	-	-	-	-	-	80.60
WF	NEW	Montebello Washwater Lake Dredging & Remediation	3.13	3.13	3.13	16.09	4.17	4.17	4.17	4.17	4.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46.30
WF	NEW	Hydropower Study	-	-	-	1.56	1.56	1.56	1.56	1.56	1.56	1.56	5.95	4.38	4.38	4.38	4.38	4.38	-	-	-	-	-	-	-	-	-	38.80
WF	NEW	Baltimore City Water Bottling - Feasibility Study	-	-	-	1.79	1.79	1.79	1.79	1.79	1.79	6.75	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	25.80
WF	NEW	Water Supply Capacity Analysis	-	-	-	-	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	23.98	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	89.70
WWU	551-144	GIS Updates & Mapping Program	3.83	3.83	25.60	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.60
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	4.50	4.50	27.10	8.50	8.50	8.50	8.50	8.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
WWU	551-410	Herring Run Interceptor improvements	6.25	34.93	12.08	12.08	12.08	12.08	12.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101.60
WWU	551-569	Urgent Need Sanitary Design Services	1.79	1.79	1.79	1.79	1.79	1.79	23.55	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	72.60
WWU	551-609	SW Diversion Pressure Sewer Improvements	3.13	3.13	3.13	34.89	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82.60
WWU	551-611	Low Level Sewershed Improvements	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	38.38	10.50	10.50	10.50	10.50	10.50	-	-	-	-	-	-	-	-	-	-	-	101.10
WWU	551-612	Outfall Sewershed Improvements	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	37.57	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	-	-	-	-	98.10
WWU	551-614	Dundalk Sewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	38.00	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	-	-	-	-	-	-	-	98.10
WWU	551-616	Patapsco Sewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	38.00	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	-	-	-	-	-	-	-	98.10
WWU	551-620	High LevelSewershed Improvements	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	42.39	11.00	11.00	11.00	11.00	11.00	-	-	-	-	-	-	-	-	-	-	-	108.50
WWU	551-622	Gwynns FallsSewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	41.90	10.33	10.33	10.33	10.33	10.33	-	-	-	-	-	-	-	-	-	-	-	-	104.50
WWU	551-624	Herring Run Sewershed Improvements	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	43.06	11.67	11.67	11.67	11.67	11.67	-	-	-	-	-	-	-	-	-	-	-	112.50
WWU	551-626	Jones Falls Sewershed Improvements	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	43.82	12.67	12.67	12.67	12.67	12.67	-	-	-	-	-	-	-	-	-	-	117.50
WWU	551-627	Wet Weather Program Operation and Management	3.13	3.13	3.13	45.63	12.50	12.50	12.50	12.50	12.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117.50
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	2.08	2.08	2.08	2.08	2.08	41.25	9.17	9.17	9.17	9.17	9.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97.50
WWF	551-526	Back River Digester Renovation SC-8526	2.25	2.25	2.25	18.43	2.08	2.08	2.08	2.08	2.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35.60
WWF	551-528	Patapsco ENR Denitrification and Nitrification	2.67	2.67	2.67	2.67	2.67	35.12	8.35	8.35	8.35	8.35	8.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90.20
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	-	-	-	3.33	3.33	27.35	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.10
WWF	551-533	Annual Facilities Improvements	2.50	2.50	2.50	12.22	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.80
WWF	551-533	Back River Facilities Improvements	2.00	2.00	2.00	2.00	7.13	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.30
WWF	551-533	Patapsco Facilities Improvements	1.43	1.43	1.43	1.43	1.43	1.43	14.86	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	32.60
WWF	551-557	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	28.60	6.68	6.68	6.68	6.68	6.68	-	-	-	-	-	-	-	-	-	80.20

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WWF	551-561	Back River Settling Tanks	2.00	2.00	2.00	2.00	13.83	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31.00
WWF	551-585	Pat LOX Plant Upgrade SC-868	2.50	2.50	2.50	26.92	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.50
WWF	551-681	WW Facilities Security Improvements	-	-	2.00	2.00	2.00	2.00	10.50	1.00	1.00	1.00	1.00	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	23.50
WWF	551-685	Back River Scum & Grease System	4.17	4.17	11.08	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.50
WWF	551-687	Patapsco Chlorine Conversion SC-857	5.00	30.50	2.50	2.50	2.50	2.50	2.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48.00
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	2.25	2.25	2.25	37.67	5.42	5.42	5.42	5.42	5.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.50
WWF	551-692	Back River Electrical System Upgrade	2.25	2.25	2.25	15.22	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.30
WWF	551-692	Patapsco Electrical System Upgrade	2.00	2.00	2.00	2.00	9.97	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.30
WWF	551-752	McComas Street PS/FM Upgrade	5.00	20.93	2.63	2.63	2.63	2.63	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.10
WWF	551-755	Pump Station Force Main Improvements, various locations	2.25	2.25	2.25	18.18	2.63	2.63	2.63	2.63	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.10
WWF	551-503: On Call	On-Call Engineering Services	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.00
WWF	NEW	Optimization of Inventory Control	-	-	-	-	1.67	1.67	1.67	1.67	1.67	8.08	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	23.50
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	-	-	-	1.67	1.67	1.67	1.67	1.67	3.33	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	20.00
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	-	-	-	-	1.79	1.79	1.79	1.79	1.79	1.79	11.20	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	29.00
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	-	-	-	-	1.13	1.13	1.13	1.13	1.13	1.13	1.13	7.76	3.33	3.33	3.33	3.33	3.33	-	-	-	-	-	-	-	-	32.30
SWU	NEW	Conveyance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34.33	8.33	8.33	8.33	8.33	76.00
SWF	NEW	Outfalls	-	-	-	-	-	-	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	33.55	10.42	10.42	10.42	10.42	10.42	92.60
WU	NEW	Pipelines/Distribution System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	NEW	Montebello 1 Membrane Filteration $60M	-	-	-	-	-	-	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	31.27	7.92	7.92	7.92	7.92	7.92	75.50
WF	557-300	Montebello Generator $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	30.39	6.75	6.75	6.75	6.75	6.75	72.50
WF	NEW	Montebello Chemical Systems Upgrade $35M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	30.25	6.75	6.75	6.75	6.75	6.75	70.50
WF	NEW	Montebello Preliminary/Settling Upgrade $35M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	29.02	8.92	8.92	8.92	8.92	8.92	80.10
WF	NEW	Ashburton Recycle Facilities $30M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	7.00
WF	NEW	Ashburton Generator $10M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	27.89	6.75	6.75	6.75	6.75	6.75	70.00
WF	NEW	Ashburton Preliminary/Settling Upgrade $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	26.59	8.92	8.92	8.92	8.92	8.92	78.60
WF	NEW	Pumping Stations	-	-	-	-	-	-	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	30.09	6.55	6.55	6.55	6.55	6.55	69.80
WF	NEW	Reservoirs & Tanks	-	-	-	-	-	-	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	35.53	9.85	9.85	9.85	9.85	9.85	93.60
WWU	NEW	Collection System	-	-	-	-	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	27.53	7.22	7.22	7.22	7.22	7.22	66.40
WWF	NEW	Patapsco Secondary Treatment Upgrades $50M	-	-	-	-	-	-	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	-	-	-	-	-	6.00

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WWF	NEW	Patapsco Sludge Digestion Facilities $50M	-	-	-	-	-	-	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	-	-	-	-	-	6.00
WWF	NEW	Patapsco Green Energy $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Patapsco Hypochlorite Generation Facility $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Patapsco Pelletization Facility Upgrade $40M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	7.00
WWF	NEW	Patapsco Chemical Facilities Upgrade $10M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Back River Secondary Treatment Upgrades $75M	-	-	-	-	-	-	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	-	-	-	-	-	4.00
WWF	NEW	Back River Egg-Shaped Digester Additions $75M	-	-	-	-	-	-	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	-	-	-	-	-	4.00
WWF	NEW	Back River Sludge Storage Facility $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Back River Pelletization Faciltiy Upgrade $60M	-	-	-	-	-	-	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	-	-	-	-	-	5.00
WWF	NEW	Back River Hypochlorite Generation Facility $30M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Back River Green Energy $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Pumping Stations & Force Mains	-	-	-	-	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	-	-	-	-	-	3.00
Total Benefits per Year			334	469	683	969	861	885	1,038	808	818	571	446	357	272	180	114	90	59	40	12	343	88	88	88	88	88	9,790

Appendix E, Benefits Quantification for the Status Quo

Table E.2, Benefits Quantification for Scenario 1A

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
SWU	520-102	Small Storm Drain and Inlet Repair	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	27.33	6.67	6.67	6.67	6.67	6.67	-	-	-	-	-	-	-	-	68.00
SWU	520-093	Race Street Box Culvert	34.27	5.27	5.27	5.27	5.27	5.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.60
SWU	520-715	Northeast Baltimore Drainage Improvements	3.00	3.00	24.87	5.27	5.27	5.27	5.27	5.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57.20
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	3.33	3.33	27.70	7.77	7.77	7.77	7.77	7.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73.20
SWU	520-708	Storm Water Pumping Station Improvements Highland Town	41.35	4.75	4.75	4.75	4.75	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65.10
SWU	520-451	Fairmount Storm Drain Improvements	5.50	27.23	5.13	5.13	5.13	5.13	5.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.40
SWU	520-NEW	Patapsco Avenue Drainage Improvement	2.50	2.50	2.50	2.50	20.13	7.63	7.63	7.63	7.63	7.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.30
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	2.50	2.50	2.50	23.82	4.72	4.72	4.72	4.72	4.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54.90
SWU	520-NEW	North Point Road Drainage Improvement	3.00	3.00	30.77	7.77	7.77	7.77	7.77	7.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.60
SWU	520-NEW	2300 Block Seamon Ave	5.00	32.63	7.63	7.63	7.63	7.63	7.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.80
SWU	NEW	Harris Creek Storm Drainage	1.43	1.43	1.43	1.43	1.43	1.43	35.76	8.33	8.33	8.33	8.33	8.33	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	4.38	4.38	4.38	32.46	8.08	8.08	8.08	8.08	8.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	4.75	4.75	4.75	40.33	15.58	15.58	15.58	15.58	15.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	132.50
SWF	525-405	ER4018 Powder Mill Run	10.00	40.58	10.58	10.58	10.58	10.58	10.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103.50
SWF	525-449	ER4016 Bush Street Debris Collector	6.33	6.33	30.83	4.50	4.50	4.50	4.50	4.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.00
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	8.75	38.33	9.58	9.58	9.58	9.58	9.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95.00
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	4.13	4.13	4.13	37.71	13.58	13.58	13.58	13.58	13.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118.00
SWF	525-NEW	Stony Run Environmental Restoration Projects	4.38	4.38	4.38	35.46	11.08	11.08	11.08	11.08	11.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104.00
SWF	525-NEW	Moores Run Environmental Restoration Projects	2.92	2.92	2.92	2.92	2.92	36.67	13.75	13.75	13.75	13.75	13.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120.00
SWF	525-NEW	Stream Restoration TBD	3.50	3.50	3.50	3.50	28.25	14.75	14.75	14.75	14.75	14.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	116.00
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	5.83	5.83	26.93	4.50	4.50	4.50	4.50	4.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61.10
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	2.92	2.92	2.92	2.92	2.92	24.43	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.60
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	4.00	4.00	4.00	4.00	15.52	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56.10
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	4.38	4.38	4.38	25.89	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.60

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	3.50	3.50	3.50	3.50	22.17	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.50
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	5.83	5.83	34.50	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89.50
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	5.50	5.50	34.17	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88.50
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	4.13	4.13	4.13	32.79	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88.50
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	4.13	4.13	4.13	32.38	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	4.38	4.38	4.38	32.63	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	Facility Greening Projects Jones Falls WS	5.83	5.83	34.08	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	Facility Greening Projects Back River WS	5.83	5.83	34.08	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	8.75	32.77	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	8.75	32.77	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	4.38	4.38	4.38	28.39	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	4.38	4.38	4.38	28.39	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
WU	557-002	Water Utility Billing System	2.00	2.00	2.00	2.00	17.43	5.43	5.43	5.43	5.43	5.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.60
WU	557-031	Water Distribution System - Improvements	1.80	1.80	1.80	1.80	19.98	8.18	8.18	8.18	8.18	8.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.10
WU	557-099	GIS Support and Improvements	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	14.54	4.67	4.67	4.67	4.67	4.67	-	-	-	-	-	-	-	47.10
WU	557-100	Water Infrastructure Rehabilitation	1.50	1.50	1.50	1.50	22.60	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84.10
WU	557-101	Water Mains - Installation	3.13	3.13	3.13	34.23	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99.10
WU	557-130	Water System Cathodic Protection	2.00	2.00	2.00	2.00	15.33	3.33	3.33	3.33	3.33	3.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40.00
WU	557-133	Meter Replacement Program	3.33	3.33	26.03	6.10	6.10	6.10	6.10	6.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.20
WU	557-400	Valve and Hydrant Exercising - Annual	3.67	3.67	23.00	4.33	4.33	4.33	4.33	4.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.00
WU	557-638	Water Audit	2.25	2.25	2.25	18.60	4.75	4.75	4.75	4.75	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.10
WU	557-689	Urgent Needs Water Engineering Services	1.67	1.67	1.67	1.67	1.67	29.88	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.30
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	2.10	2.10	2.10	2.10	23.20	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.10
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	3.50	3.50	34.05	10.55	10.55	10.55	10.55	10.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93.80
WU	NEW	Large Valve Replacement	1.67	1.67	1.67	1.67	1.67	22.60	4.33	4.33	4.33	4.33	4.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.60
WU	NEW	SCADA Upgrades	1.29	1.29	1.29	1.29	1.29	1.29	27.29	6.00	6.00	6.00	6.00	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	65.00
WU	NEW	Water modeling	1.29	1.29	1.29	1.29	1.29	1.29	23.89	6.00	6.00	6.00	6.00	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	61.60
WU	NEW	Leak Detection & Rehab – Large mains	1.57	1.57	1.57	1.57	1.57	1.57	23.39	7.22	7.22	7.22	7.22	7.22	-	-	-	-	-	-	-	-	-	-	-	-	-	68.90

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WU	557-687	Large Main Rehab & Replacement, PCCP	2.07	2.07	2.07	2.07	2.07	2.07	32.62	10.55	10.55	10.55	10.55	10.55	-	-	-	-	-	-	-	-	-	-	-	-	-	97.80
WF	557-068	Loch Raven - Roads & Culvert repair	2.50	2.50	2.50	29.33	6.83	6.83	6.83	6.83	6.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.00
WF	557-068	Pretty Boy Reservoir - Roads & Culvert repair	3.33	3.33	30.72	7.38	7.38	7.38	7.38	7.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.30
WF	557-068	Liberty Reservoir - Roads & Culvert repair	3.33	3.33	30.72	7.38	7.38	7.38	7.38	7.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.30
WF	557-070	Watershed Bridge Repair	1.64	1.64	1.64	1.64	1.64	1.64	20.53	5.58	5.58	5.58	5.58	5.58	-	-	-	-	-	-	-	-	-	-	-	-	-	58.30
WF	557-158	Earthen Dam Improvement Program WC-1127	2.50	2.50	2.50	2.50	23.50	5.00	5.00	5.00	5.00	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.50
WF	557-300	Urgent Needs Water Facilities - Annual Improvements	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	26.04	5.17	5.17	5.17	5.17	5.17	-	-	-	-	-	-	-	-	-	-	-	62.10
WF	557-312	Montebello WTP 1 & 2 Improvements	-	-	-	-	-	-	-	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	22.32	4.33	4.33	4.33	4.33	4.33	54.60
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	2.50	2.50	2.50	2.50	17.27	8.47	8.47	8.47	8.47	8.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69.60
WF	557-696	Chlorine Handling Safety Improvements WC-1150	1.64	1.64	1.64	1.64	1.64	1.64	24.46	7.72	7.72	7.72	7.72	7.72	-	-	-	-	-	-	-	-	-	-	-	-	-	72.90
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	2.70	2.70	2.70	2.70	24.22	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76.10
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	1.64	1.64	1.64	1.64	1.64	1.64	25.66	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	76.60
WF	557-713	Finished Water Improvements - Towson FW Reservoir	3.13	3.13	3.13	27.14	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77.60
WF	557-715	UV disinfection - Ashburton FW Reservoir	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	36.13	9.85	9.85	9.85	9.85	9.85	-	-	-	-	-	-	-	-	-	-	-	95.60
WF	557-716	UV disinfection - Druid Lake FW Reservoir	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	36.13	9.85	9.85	9.85	9.85	9.85	-	-	-	-	-	-	-	-	-	-	-	95.60
WF	557-727	Deer Creek Pumping Station Improvements	3.38	3.38	3.38	24.21	5.83	5.83	5.83	5.83	5.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.50
WF	557-730	Fullerton Water Filtration Plant WC 1169	-	-	-	-	-	-	-	-	-	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	23.93	8.88	8.88	8.88	8.88	8.88	-	79.60
WF	557-731	Montebello Water Recycle Program	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	6.91	5.63	5.63	5.63	5.63	5.63	-	-	-	-	-	-	-	-	-	-	-	45.30
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	2.50	2.50	2.50	2.50	19.82	4.02	4.02	4.02	4.02	4.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.90
WF	557-921	Maint Bldg. Impr. At Liberty Dam WC 1207	1.79	1.79	1.79	1.79	1.79	1.79	12.89	3.60	3.60	3.60	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	41.60
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	1.64	1.64	1.64	1.64	1.64	1.64	31.19	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	73.80
WF	557-922	Vernon Pump Station Rehabilitation	2.30	2.30	2.30	2.30	21.85	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.80
WF	557-923	Cromwell Pump Station Rehabilitation	2.30	2.30	2.30	2.30	21.85	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.80
WF	557-924	Pikesville Pump Station Rehabilitation	2.08	2.08	2.08	2.08	2.08	31.63	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.80
WF	557-926	Towson Pump Station Rehabilitation	2.08	2.08	2.08	2.08	2.08	31.63	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.80
WF	557-928	Ashburton Pump Station Rehabilitation	1.64	1.64	1.64	1.64	1.64	1.64	31.19	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	73.80
WF	557-927	Ashburton Chemical Laboratory	2.50	2.50	2.50	2.50	17.27	8.47	8.47	8.47	8.47	8.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69.60
WF	557-928	Urgent needs - Water Facilities Engineering	4.17	4.17	38.38	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.80
WF	557-573	Raw water Tunnel Inspections	4.17	4.17	27.68	9.72	9.72	9.72	9.72	9.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84.60

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WF	NEW	Water Recycling and Solids Handling - Ashburton	1.56	1.56	1.56	1.56	1.56	1.56	1.56	33.05	8.88	8.88	8.88	8.88	8.88	-	-	-	-	-	-	-	-	-	-	-	-	88.40
WF	NEW	Inspection/Maintenance of PS'S	-	-	-	-	-	-	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	20.34	8.22	8.22	8.22	8.22	8.22	72.10
WF	NEW	Personnel training in Electrical and Instrumentation certification.	1.67	1.67	1.67	1.67	1.67	11.72	3.75	3.75	3.75	3.75	3.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.80
WF	NEW	Staffing Needs	1.67	1.67	1.67	1.67	1.67	19.30	6.33	6.33	6.33	6.33	6.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59.30
WF	NEW	Preventive Maintenace Program	1.83	1.83	1.83	1.83	1.83	29.77	8.33	8.33	8.33	8.33	8.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80.60
WF	NEW	Montebello Washwater Lake Dredging & Remediation	3.13	3.13	3.13	16.09	4.17	4.17	4.17	4.17	4.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46.30
WF	NEW	Hydropower Study	1.56	1.56	1.56	1.56	1.56	1.56	1.56	5.95	4.38	4.38	4.38	4.38	4.38	-	-	-	-	-	-	-	-	-	-	-	-	38.80
WF	NEW	Baltimore City Water Bottling - Feasibility Study	1.79	1.79	1.79	1.79	1.79	1.79	6.75	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	25.80
WF	NEW	Water Supply Capacity Analysis	-	-	-	-	-	-	-	-	-	-	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	23.98	11.10	11.10	11.10	11.10	11.10	-	89.70
WWU	551-144	GIS Updates & Mapping Program	3.83	3.83	25.60	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.60
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	4.50	4.50	27.10	8.50	8.50	8.50	8.50	8.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
WWU	551-410	Herring Run Interceptor improvements	6.25	34.93	12.08	12.08	12.08	12.08	12.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101.60
WWU	551-569	Urgent Need Sanitary Design Services	1.79	1.79	1.79	1.79	1.79	1.79	23.55	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	72.60
WWU	551-609	SW Diversion Pressure Sewer Improvements	3.13	3.13	3.13	34.89	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82.60
WWU	551-611	Low Level Sewershed Improvements	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	38.38	10.50	10.50	10.50	10.50	10.50	-	-	-	-	-	-	-	-	-	-	-	101.10
WWU	551-612	Outfall Sewershed Improvements	-	-	-	-	-	-	-	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	37.57	9.83	9.83	9.83	9.83	9.83	-	-	98.10
WWU	551-614	Dundalk Sewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	38.00	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	-	-	-	-	-	-	-	98.10
WWU	551-616	Patapsco Sewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	38.00	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	-	-	-	-	-	-	-	98.10
WWU	551-620	High LevelSewershed Improvements	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	42.39	11.00	11.00	11.00	11.00	11.00	-	-	-	-	-	-	-	-	-	-	-	108.50
WWU	551-622	Gwynns FallsSewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	41.90	10.33	10.33	10.33	10.33	10.33	-	-	-	-	-	-	-	-	-	-	-	-	104.50
WWU	551-624	Herring Run Sewershed Improvements	-	-	-	-	-	-	-	-	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	43.06	11.67	11.67	11.67	11.67	11.67	-	-	-	112.50
WWU	551-626	Jones Falls Sewershed Improvements	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	43.82	12.67	12.67	12.67	12.67	12.67	-	-	-	-	-	-	-	-	-	-	117.50
WWU	551-627	Wet Weather Program Operation and Management	3.13	3.13	3.13	45.63	12.50	12.50	12.50	12.50	12.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117.50
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	2.08	2.08	2.08	2.08	2.08	41.25	9.17	9.17	9.17	9.17	9.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97.50
WWF	551-526	Back River Digester Renovation SC-8526	2.25	2.25	2.25	18.43	2.08	2.08	2.08	2.08	2.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35.60
WWF	551-528	Patapsco ENR Denitrification and Nitrification	2.67	2.67	2.67	2.67	2.67	35.12	8.35	8.35	8.35	8.35	8.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90.20
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	3.33	3.33	27.35	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.10
WWF	551-533	Annual Facilities Improvements	2.50	2.50	2.50	12.22	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.80
WWF	551-533	Back River Facilities Improvements	2.00	2.00	2.00	2.00	7.13	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.30

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WWF	551-533	Patapsco Facilities Improvements	1.43	1.43	1.43	1.43	1.43	1.43	14.86	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	32.60
WWF	551-557	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	28.60	6.68	6.68	6.68	6.68	6.68	-	-	-	-	-	-	-	-	-	80.20
WWF	551-561	Back River Settling Tanks	2.00	2.00	2.00	2.00	13.83	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31.00
WWF	551-585	Pat LOX Plant Upgrade SC-868	2.50	2.50	2.50	26.92	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.50
WWF	551-681	WW Facilities Security Improvements	2.00	2.00	2.00	2.00	3.00	1.00	1.00	1.00	1.00	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.00
WWF	551-685	Back River Scum & Grease System	4.17	4.17	11.08	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.50
WWF	551-687	Patapsco Chlorine Conversion SC-857	5.00	30.50	2.50	2.50	2.50	2.50	2.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48.00
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	1.50	1.50	1.50	1.50	1.50	36.92	5.42	5.42	5.42	5.42	5.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.50
WWF	551-692	Back River Electrical System Upgrade	2.25	2.25	2.25	15.22	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.30
WWF	551-692	Patapsco Electrical System Upgrade	2.00	2.00	2.00	2.00	9.97	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.30
WWF	551-752	McComas Street PS/FM Upgrade	5.00	20.93	2.63	2.63	2.63	2.63	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.10
WWF	551-755	Pump Station Force Main Improvements, various locations	2.25	2.25	2.25	18.18	2.63	2.63	2.63	2.63	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.10
WWF	551-503: On Call	On-Call Engineering Services	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	-	-	-	-	-	-	-	-	13.00
WWF	NEW	Optimization of Inventory Control	1.67	1.67	1.67	1.67	1.67	8.08	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.50
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	1.67	1.67	1.67	1.67	1.67	3.33	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.00
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	1.79	1.79	1.79	1.79	1.79	1.79	11.20	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	29.00
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	-	-	-	-	-	-	-	-	-	-	-	-	1.13	1.13	1.13	1.13	1.13	1.13	1.13	7.76	3.33	3.33	3.33	3.33	3.33	32.30
SWU	NEW	Conveyance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34.33	8.33	8.33	8.33	8.33	8.33	76.00
SWF	NEW	Outfalls	-	-	-	-	-	-	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	33.55	10.42	10.42	10.42	10.42	10.42	92.60
WU	NEW	Pipelines/Distribution System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	NEW	Montebello 1 Membrane Filteration $60M	-	-	-	-	-	-	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	31.27	7.92	7.92	7.92	7.92	7.92	75.50
WF	557-300	Montebello Generator $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	30.39	6.75	6.75	6.75	6.75	6.75	72.50
WF	NEW	Montebello Chemical Systems Upgrade $35M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	30.25	6.75	6.75	6.75	6.75	6.75	70.50
WF	NEW	Montebello Preliminary/Settling Upgrade $35M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	29.02	8.92	8.92	8.92	8.92	8.92	80.10
WF	NEW	Ashburton Recycle Facilities $30M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	7.00
WF	NEW	Ashburton Generator $10M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	27.89	6.75	6.75	6.75	6.75	6.75	70.00
WF	NEW	Ashburton Preliminary/Settling Upgrade $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	26.59	8.92	8.92	8.92	8.92	8.92	78.60
WF	NEW	Pumping Stations	-	-	-	-	-	-	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	30.09	6.55	6.55	6.55	6.55	6.55	69.80
WF	NEW	Reservoirs & Tanks	-	-	-	-	-	-	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	35.53	9.85	9.85	9.85	9.85	9.85	93.60

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WWU	NEW	Collection System	-	-	-	-	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	27.53	7.22	7.22	7.22	7.22	7.22	66.40
WWF	NEW	Patapsco Secondary Treatment Upgrades $50M	-	-	-	-	-	-	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	-	-	-	-	-	6.00
WWF	NEW	Patapsco Sludge Digestion Facilities $50M	-	-	-	-	-	-	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	-	-	-	-	-	6.00
WWF	NEW	Patapsco Green Energy $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Patapsco Hypochlorite Generation Facility $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Patapsco Pelletization Facility Upgrade $40M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	7.00
WWF	NEW	Patapsco Chemical Facilities Upgrade $10M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Back River Secondary Treatment Upgrades $75M	-	-	-	-	-	-	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	-	-	-	-	-	4.00
WWF	NEW	Back River Egg-Shaped Digester Additions $75M	-	-	-	-	-	-	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	-	-	-	-	-	4.00
WWF	NEW	Back River Sludge Storage Facility $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Back River Pelletization Faciltiy Upgrade $60M	-	-	-	-	-	-	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	-	-	-	-	-	5.00
WWF	NEW	Back River Hypochlorite Generation Facility $30M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Back River Green Energy $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Pumping Stations & Force Mains	-	-	-	-	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	-	-	-	-	-	3.00
Total Benefits per Year			427	589	857	1,003	816	915	965	796	725	467	335	251	157	103	51	39	77	71	84	435	146	146	134	124	104	9,817

Appendix E, Benefits Quantification for the Status Quo

Table E.3, Benefits Quantification for Scenario 1B

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
SWU	520-102	Small Storm Drain and Inlet Repair	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWU	520-093	Race Street Box Culvert	34.27	5.27	5.27	5.27	5.27	5.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.60
SWU	520-715	Northeast Baltimore Drainage Improvements	3.00	3.00	24.87	5.27	5.27	5.27	5.27	5.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57.20
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	3.33	3.33	27.70	7.77	7.77	7.77	7.77	7.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73.20
SWU	520-708	Storm Water Pumping Station Improvements Highland Town	41.35	4.75	4.75	4.75	4.75	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65.10
SWU	520-451	Fairmount Storm Drain Improvements	5.50	27.23	5.13	5.13	5.13	5.13	5.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.40
SWU	520-NEW	Patapsco Avenue Drainage Improvement	2.50	2.50	2.50	2.50	20.13	7.63	7.63	7.63	7.63	7.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.30
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	2.50	2.50	2.50	23.82	4.72	4.72	4.72	4.72	4.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54.90
SWU	520-NEW	North Point Road Drainage Improvement	3.00	3.00	30.77	7.77	7.77	7.77	7.77	7.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.60
SWU	520-NEW	2300 Block Seamon Ave	5.00	32.63	7.63	7.63	7.63	7.63	7.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.80
SWU	NEW	Harris Creek Storm Drainage	-	-	-	-	-	-	-	-	-	-	1.43	1.43	1.43	1.43	1.43	1.43	35.76	8.33	8.33	8.33	8.33	8.33	-	-	-	86.00
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	4.38	4.38	4.38	32.46	8.08	8.08	8.08	8.08	8.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	4.75	4.75	4.75	40.33	15.58	15.58	15.58	15.58	15.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	132.50
SWF	525-405	ER4018 Powder Mill Run	10.00	40.58	10.58	10.58	10.58	10.58	10.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103.50
SWF	525-449	ER4016 Bush Street Debris Collector	6.33	6.33	30.83	4.50	4.50	4.50	4.50	4.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.00
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	8.75	38.33	9.58	9.58	9.58	9.58	9.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95.00
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	4.13	4.13	4.13	37.71	13.58	13.58	13.58	13.58	13.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118.00
SWF	525-NEW	Stony Run Environmental Restoration Projects	4.38	4.38	4.38	35.46	11.08	11.08	11.08	11.08	11.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104.00
SWF	525-NEW	Moores Run Environmental Restoration Projects	2.92	2.92	2.92	2.92	2.92	36.67	13.75	13.75	13.75	13.75	13.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120.00
SWF	525-NEW	Stream Restoration TBD	3.50	3.50	3.50	3.50	28.25	14.75	14.75	14.75	14.75	14.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	116.00
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	5.83	5.83	26.93	4.50	4.50	4.50	4.50	4.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61.10
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	2.92	2.92	2.92	2.92	2.92	24.43	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.60
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	4.00	4.00	4.00	4.00	15.52	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56.10

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	4.38	4.38	4.38	25.89	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.60
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	3.50	3.50	3.50	3.50	22.17	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.50
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	5.83	5.83	34.50	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89.50
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	5.50	5.50	34.17	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88.50
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	4.13	4.13	4.13	32.79	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88.50
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	4.13	4.13	4.13	32.38	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	4.38	4.38	4.38	32.63	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	Facility Greening Projects Jones Falls WS	5.83	5.83	34.08	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	Facility Greening Projects Back River WS	5.83	5.83	34.08	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	8.75	32.77	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	8.75	32.77	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	4.38	4.38	4.38	28.39	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	4.38	4.38	4.38	28.39	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
WU	557-002	Water Utility Billing System	2.00	2.00	2.00	2.00	17.43	5.43	5.43	5.43	5.43	5.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.60
WU	557-031	Water Distribution System - Improvements	1.80	1.80	1.80	1.80	19.98	8.18	8.18	8.18	8.18	8.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.10
WU	557-099	GIS Support and Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WU	557-100	Water Infrastructure Rehabilitation	1.50	1.50	1.50	1.50	22.60	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84.10
WU	557-101	Water Mains - Installation	3.13	3.13	3.13	34.23	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99.10
WU	557-130	Water System Cathodic Protection	2.00	2.00	2.00	2.00	15.33	3.33	3.33	3.33	3.33	3.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40.00
WU	557-133	Meter Replacement Program	-	3.33	3.33	26.03	6.10	6.10	6.10	6.10	6.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.20
WU	557-400	Valve and Hydrant Exercising - Annual	3.67	3.67	23.00	4.33	4.33	4.33	4.33	4.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.00
WU	557-638	Water Audit	2.25	2.25	2.25	18.60	4.75	4.75	4.75	4.75	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.10
WU	557-689	Urgent Needs Water Engineering Services	1.67	1.67	1.67	1.67	1.67	29.88	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.30
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	2.10	2.10	2.10	2.10	23.20	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.10
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	3.50	3.50	34.05	10.55	10.55	10.55	10.55	10.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93.80
WU	NEW	Large Valve Replacement	1.67	1.67	1.67	1.67	1.67	22.60	4.33	4.33	4.33	4.33	4.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.60

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WU	NEW	SCADA Upgrades	-	-	-	-	-	-	-	-	-	-	1.29	1.29	1.29	1.29	1.29	1.29	27.29	6.00	6.00	6.00	6.00	6.00	-	-	-	65.00
WU	NEW	Water modeling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WU	NEW	Leak Detection & Rehab – Large mains	1.57	1.57	1.57	1.57	1.57	1.57	23.39	7.22	7.22	7.22	7.22	7.22	-	-	-	-	-	-	-	-	-	-	-	-	-	68.90
WU	557-687	Large Main Rehab & Replacement, PCCP	2.07	2.07	2.07	2.07	2.07	2.07	32.62	10.55	10.55	10.55	10.55	10.55	-	-	-	-	-	-	-	-	-	-	-	-	-	97.80
WF	557-068	Loch Raven - Roads & Culvert repair	2.50	2.50	2.50	29.33	6.83	6.83	6.83	6.83	6.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.00
WF	557-068	Pretty Boy Reservoir - Roads & Culvert repair	3.33	3.33	30.72	7.38	7.38	7.38	7.38	7.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.30
WF	557-068	Liberty Reservoir - Roads & Culvert repair	3.33	3.33	30.72	7.38	7.38	7.38	7.38	7.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.30
WF	557-070	Watershed Bridge Repair	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	557-158	Earthen Dam Improvement Program WC-1127	2.50	2.50	2.50	2.50	23.50	5.00	5.00	5.00	5.00	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.50
WF	557-300	Urgent Needs Water Facilities - Annual Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	557-312	Montebello WTP 1 & 2 Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	2.50	2.50	2.50	2.50	17.27	8.47	8.47	8.47	8.47	8.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69.60
WF	557-696	Chlorine Handling Safety Improvements WC-1150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	2.70	2.70	2.70	2.70	24.22	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76.10
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	-	-	-	-	-	-	-	-	-	-	-	-	-	1.64	1.64	1.64	1.64	1.64	1.64	25.66	8.22	8.22	8.22	8.22	8.22	76.60
WF	557-713	Finished Water Improvements - Towson FW Reservoir	3.13	3.13	3.13	27.14	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77.60
WF	557-715	UV disinfection - Ashburton FW Reservoir	-	-	-	-	-	-	-	-	-	-	-	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	36.13	9.85	9.85	9.85	9.85	9.85	95.60
WF	557-716	UV disinfection - Druid Lake FW Reservoir	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	557-727	Deer Creek Pumping Station Improvements	3.38	3.38	3.38	24.21	5.83	5.83	5.83	5.83	5.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.50
WF	557-730	Fullerton Water Filtration Plant WC 1169	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	23.93	8.88	8.88	8.88	8.88	8.88	-	-	-	-	-	-	-	-	-	-	79.60
WF	557-731	Montebello Water Recycle Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	2.50	2.50	2.50	2.50	19.82	4.02	4.02	4.02	4.02	4.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.90
WF	557-921	Maint Bldg. Impr. At Liberty Dam WC 1207	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	-	-	-	-	-	-	-	-	-	-	1.64	1.64	1.64	1.64	1.64	1.64	31.19	6.55	6.55	6.55	6.55	6.55	-	-	-	73.80
WF	557-922	Vernon Pump Station Rehabilitation	2.30	2.30	2.30	2.30	21.85	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.80
WF	557-923	Cromwell Pump Station Rehabilitation	2.30	2.30	2.30	2.30	21.85	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.80
WF	557-924	Pikesville Pump Station Rehabilitation	2.08	2.08	2.08	2.08	2.08	31.63	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.80
WF	557-926	Towson Pump Station Rehabilitation	2.08	2.08	2.08	2.08	2.08	31.63	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.80

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WF	557-928	Ashburton Pump Station Rehabilitation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	557-927	Ashburton Chemical Laboratory	2.50	2.50	2.50	2.50	17.27	8.47	8.47	8.47	8.47	8.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69.60
WF	557-928	Urgent needs - Water Facilities Engineering	4.17	4.17	38.38	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.80
WF	557-573	Raw water Tunnel Inspections	4.17	4.17	27.68	9.72	9.72	9.72	9.72	9.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84.60
WF	NEW	Water Recycling and Solids Handling - Ashburton	-	-	-	-	-	-	-	-	-	-	1.56	1.56	1.56	1.56	1.56	1.56	1.56	33.05	8.88	8.88	8.88	8.88	8.88	-	-	88.40
WF	NEW	Inspection/Maintenance of PS'S	-	-	-	-	-	-	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	20.34	8.22	8.22	8.22	8.22	8.22	72.10
WF	NEW	Personnel training in Electrical and Instrumentation certification.	1.67	1.67	1.67	1.67	1.67	11.72	3.75	3.75	3.75	3.75	3.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.80
WF	NEW	Staffing Needs	1.67	1.67	1.67	1.67	1.67	19.30	6.33	6.33	6.33	6.33	6.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59.30
WF	NEW	Preventive Maintenace Program	1.83	1.83	1.83	1.83	1.83	29.77	8.33	8.33	8.33	8.33	8.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80.60
WF	NEW	Montebello Washwater Lake Dredging & Remediation	-	-	3.13	3.13	3.13	16.09	4.17	4.17	4.17	4.17	4.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46.30
WF	NEW	Hydropower Study	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	NEW	Baltimore City Water Bottling - Feasibility Study	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	NEW	Water Supply Capacity Analysis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWU	551-144	GIS Updates & Mapping Program	3.83	3.83	25.60	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.60
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	4.50	4.50	27.10	8.50	8.50	8.50	8.50	8.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
WWU	551-410	Herring Run Interceptor improvements	6.25	34.93	12.08	12.08	12.08	12.08	12.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101.60
WWU	551-569	Urgent Need Sanitary Design Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWU	551-609	SW Diversion Pressure Sewer Improvements	3.13	3.13	3.13	34.89	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82.60
WWU	551-611	Low Level Sewershed Improvements	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	38.38	10.50	10.50	10.50	10.50	10.50	-	-	-	-	-	-	-	-	-	-	-	101.10
WWU	551-612	Outfall Sewershed Improvements	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	37.57	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	-	-	-	-	98.10
WWU	551-614	Dundalk Sewershed Improvements	-	-	-	-	-	-	-	-	-	-	1.56	1.56	1.56	1.56	1.56	1.56	1.56	38.00	9.83	9.83	9.83	9.83	9.83	-	-	98.10
WWU	551-616	Patapsco Sewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	38.00	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	-	-	-	-	-	-	-	98.10
WWU	551-620	High LevelSewershed Improvements	-	-	-	-	-	-	-	-	-	-	-	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	42.39	11.00	11.00	11.00	11.00	11.00	108.50
WWU	551-622	Gwynns FallsSewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	41.90	10.33	10.33	10.33	10.33	10.33	-	-	-	-	-	-	-	-	-	-	-	-	104.50
WWU	551-624	Herring Run Sewershed Improvements	-	-	-	-	-	-	-	-	-	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	43.06	11.67	11.67	11.67	11.67	11.67	-	-	112.50
WWU	551-626	Jones Falls Sewershed Improvements	-	-	-	-	-	-	-	-	-	-	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	43.82	12.67	12.67	12.67	12.67	12.67	117.50
WWU	551-627	Wet Weather Program Operation and Management	3.13	3.13	3.13	45.63	12.50	12.50	12.50	12.50	12.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117.50
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	2.08	2.08	2.08	2.08	2.08	41.25	9.17	9.17	9.17	9.17	9.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97.50

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WWF	551-526	Back River Digester Renovation SC-8526	2.25	2.25	2.25	18.43	2.08	2.08	2.08	2.08	2.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35.60
WWF	551-528	Patapsco ENR Denitrification and Nitrification	2.67	2.67	2.67	2.67	2.67	35.12	8.35	8.35	8.35	8.35	8.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90.20
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	3.33	3.33	27.35	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.10
WWF	551-533	Annual Facilities Improvements	2.50	2.50	2.50	12.22	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.80
WWF	551-533	Back River Facilities Improvements	2.00	2.00	2.00	2.00	7.13	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.30
WWF	551-533	Patapsco Facilities Improvements	-	-	-	-	-	-	-	-	-	-	1.43	1.43	1.43	1.43	1.43	1.43	14.86	1.83	1.83	1.83	1.83	1.83	-	-	-	32.60
WWF	551-557	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWF	551-561	Back River Settling Tanks	2.00	2.00	2.00	2.00	13.83	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31.00
WWF	551-585	Pat LOX Plant Upgrade SC-868	2.50	2.50	2.50	26.92	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.50
WWF	551-681	WW Facilities Security Improvements	2.00	2.00	2.00	2.00	3.00	1.00	1.00	1.00	1.00	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.00
WWF	551-685	Back River Scum & Grease System	4.17	4.17	11.08	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.50
WWF	551-687	Patapsco Chlorine Conversion SC-857	5.00	30.50	2.50	2.50	2.50	2.50	2.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48.00
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	1.50	1.50	1.50	1.50	1.50	36.92	5.42	5.42	5.42	5.42	5.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.50
WWF	551-692	Back River Electrical System Upgrade	-	-	2.25	2.25	2.25	15.22	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.30
WWF	551-692	Patapsco Electrical System Upgrade	2.00	2.00	2.00	2.00	9.97	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.30
WWF	551-752	McComas Street PS/FM Upgrade	5.00	20.93	2.63	2.63	2.63	2.63	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.10
WWF	551-755	Pump Station Force Main Improvements, various locations	2.25	2.25	2.25	18.18	2.63	2.63	2.63	2.63	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.10
WWF	551-503: On Call	On-Call Engineering Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WWF	NEW	Optimization of Inventory Control	1.67	1.67	1.67	1.67	1.67	8.08	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.50
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	1.67	1.67	1.67	1.67	1.67	3.33	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.00
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	-	-	-	-	-	-	-	-	-	-	1.79	1.79	1.79	1.79	1.79	1.79	11.20	1.42	1.42	1.42	1.42	1.42	-	-	-	29.00
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWU	NEW	Conveyance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34.33	8.33	8.33	8.33	8.33	8.33	76.00
SWF	NEW	Outfalls	-	-	-	-	-	-	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	33.55	10.42	10.42	10.42	10.42	10.42	92.60
WU	NEW	Pipelines/Distribution System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	NEW	Montebello 1 Membrane Filteration $60M	-	-	-	-	-	-	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	31.27	7.92	7.92	7.92	7.92	7.92	75.50
WF	557-300	Montebello Generator $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	30.39	6.75	6.75	6.75	6.75	6.75	72.50
WF	NEW	Montebello Chemical Systems Upgrade $35M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	30.25	6.75	6.75	6.75	6.75	6.75	70.50

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WF	NEW	Montebello Preliminary/Settling Upgrade $35M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	29.02	8.92	8.92	8.92	8.92	8.92	80.10
WF	NEW	Ashburton Recycle Facilities $30M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	7.00
WF	NEW	Ashburton Generator $10M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	27.89	6.75	6.75	6.75	6.75	6.75	70.00
WF	NEW	Ashburton Preliminary/Settling Upgrade $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	26.59	8.92	8.92	8.92	8.92	8.92	78.60
WF	NEW	Pumping Stations	-	-	-	-	-	-	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	30.09	6.55	6.55	6.55	6.55	6.55	69.80
WF	NEW	Reservoirs & Tanks	-	-	-	-	-	-	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	35.53	9.85	9.85	9.85	9.85	9.85	93.60
WWU	NEW	Collection System	-	-	-	-	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	27.53	7.22	7.22	7.22	7.22	7.22	66.40
WWF	NEW	Patapsco Secondary Treatment Upgrades $50M	-	-	-	-	-	-	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	-	-	-	-	-	6.00
WWF	NEW	Patapsco Sludge Digestion Facilities $50M	-	-	-	-	-	-	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	-	-	-	-	-	6.00
WWF	NEW	Patapsco Green Energy $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Patapsco Hypochlorite Generation Facility $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Patapsco Pelletization Facility Upgrade $40M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	7.00
WWF	NEW	Patapsco Chemical Facilities Upgrade $10M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Back River Secondary Treatment Upgrades $75M	-	-	-	-	-	-	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	-	-	-	-	-	4.00
WWF	NEW	Back River Egg-Shaped Digester Additions $75M	-	-	-	-	-	-	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	-	-	-	-	-	4.00
WWF	NEW	Back River Sludge Storage Facility $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Back River Pelletization Faciltiy Upgrade $60M	-	-	-	-	-	-	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	-	-	-	-	-	5.00
WWF	NEW	Back River Hypochlorite Generation Facility $30M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Back River Green Energy $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Pumping Stations & Force Mains	-	-	-	-	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	-	-	-	-	-	3.00
Total Benefits per Year			384	549	800	963	782	907	662	636	483	311	215	96	78	59	49	40	143	156	73	566	193	193	169	138	138	8,784

Appendix E, Benefits Quantification for the Status Quo

Table E.4, Benefits Quantification for Scenario 1C

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
SWU	520-102	Small Storm Drain and Inlet Repair	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	27.33	6.67	6.67	6.67	6.67	6.67	-	-	-	-	-	-	-	-	68.00
SWU	520-093	Race Street Box Culvert	34.27	5.27	5.27	5.27	5.27	5.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.60
SWU	520-715	Northeast Baltimore Drainage Improvements	3.00	3.00	24.87	5.27	5.27	5.27	5.27	5.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57.20
SWU	520-400	Pulaski Highway Drain and Inlet Rehabilitation	3.33	3.33	27.70	7.77	7.77	7.77	7.77	7.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73.20
SWU	520-708	Storm Water Pumping Station Improvements Highland Town	41.35	4.75	4.75	4.75	4.75	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65.10
SWU	520-451	Fairmount Storm Drain Improvements	5.50	27.23	5.13	5.13	5.13	5.13	5.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.40
SWU	520-NEW	Patapsco Avenue Drainage Improvement	2.50	2.50	2.50	2.50	20.13	7.63	7.63	7.63	7.63	7.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.30
SWU	520-NEW	Public Storm Drain System Hydraulic Modeling and Asset Management	2.50	2.50	2.50	23.82	4.72	4.72	4.72	4.72	4.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54.90
SWU	520-NEW	North Point Road Drainage Improvement	3.00	3.00	30.77	7.77	7.77	7.77	7.77	7.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.60
SWU	520-NEW	2300 Block Seamon Ave	5.00	32.63	7.63	7.63	7.63	7.63	7.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.80
SWU	NEW	Harris Creek Storm Drainage	1.43	1.43	1.43	1.43	1.43	1.43	35.76	8.33	8.33	8.33	8.33	8.33	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-405	ER4028 Western Run Environmental Restoration Project 2 (Kelly Ave - 1000 ft)	4.38	4.38	4.38	32.46	8.08	8.08	8.08	8.08	8.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-405	ER4023 Biddison Run Environmental Restoration Project 2 (3030 ft length upstream of Moravia to Sipple Ave, 3,850 ft length - Sipple Ave to Sinclare Lane)	4.75	4.75	4.75	40.33	15.58	15.58	15.58	15.58	15.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	132.50
SWF	525-405	ER4018 Powder Mill Run	10.00	40.58	10.58	10.58	10.58	10.58	10.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103.50
SWF	525-449	ER4016 Bush Street Debris Collector	6.33	6.33	30.83	4.50	4.50	4.50	4.50	4.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.00
SWF	525-NEW	ER4031 Franklin Town Blvd Culvert Stream Restoration (2400 ft including 452 ft tributary)	8.75	38.33	9.58	9.58	9.58	9.58	9.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95.00
SWF	525-NEW	Chinquapin Run Environmental Restoration Projects	4.13	4.13	4.13	37.71	13.58	13.58	13.58	13.58	13.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118.00
SWF	525-NEW	Stony Run Environmental Restoration Projects	4.38	4.38	4.38	35.46	11.08	11.08	11.08	11.08	11.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104.00
SWF	525-NEW	Moores Run Environmental Restoration Projects	2.92	2.92	2.92	2.92	2.92	36.67	13.75	13.75	13.75	13.75	13.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120.00
SWF	525-NEW	Stream Restoration TBD	3.50	3.50	3.50	3.50	28.25	14.75	14.75	14.75	14.75	14.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	116.00
SWF	525-NEW	ER4034 Biddison Run Debris Collector Project 1	5.83	5.83	26.93	4.50	4.50	4.50	4.50	4.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61.10
SWF	525-NEW	In-line Debris Collection System Projects Direct Harbor WS	2.92	2.92	2.92	2.92	2.92	24.43	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.60
SWF	525-NEW	In-line Debris Collection System Projects Gwynns Falls	4.00	4.00	4.00	4.00	15.52	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56.10
SWF	525-NEW	In-line Debris Collection System Projects Jones Falls	4.38	4.38	4.38	25.89	4.92	4.92	4.92	4.92	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.60

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
SWF	525-NEW	Urban Watershed Retrofit Projects Direct Harbor WS	3.50	3.50	3.50	3.50	22.17	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.50
SWF	525-NEW	Urban Watershed Retrofit Projects Back River WS	5.83	5.83	34.50	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89.50
SWF	525-NEW	Urban Watershed Retrofit Projects Gwynns Falls WS	5.50	5.50	34.17	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88.50
SWF	525-NEW	Urban Watershed Retrofit Projects Jones Falls WS	4.13	4.13	4.13	32.79	8.67	8.67	8.67	8.67	8.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88.50
SWF	525-NEW	Facility Greening Projects Direct Harbor WS	4.13	4.13	4.13	32.38	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.00
SWF	525-NEW	Facility Greening Projects Gwynns Falls WS	4.38	4.38	4.38	32.63	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	Facility Greening Projects Jones Falls WS	5.83	5.83	34.08	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	Facility Greening Projects Back River WS	5.83	5.83	34.08	8.25	8.25	8.25	8.25	8.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.00
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Gwynns Falls WS (300 inlets)	8.75	32.77	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Back River WS (300 inlets)	8.75	32.77	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Jones Falls WS (300 inlets)	4.38	4.38	4.38	28.39	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
SWF	525-NEW	At-inlet Debris Collection / Catch Basin Inserts Project Direct Harbor WS (600 inlets)	4.38	4.38	4.38	28.39	7.42	7.42	7.42	7.42	7.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
WU	557-002	Water Utility Billing System	2.00	2.00	2.00	2.00	17.43	5.43	5.43	5.43	5.43	5.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.60
WU	557-031	Water Distribution System - Improvements	1.80	1.80	1.80	1.80	19.98	8.18	8.18	8.18	8.18	8.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68.10
WU	557-099	GIS Support and Improvements	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	14.54	4.67	4.67	4.67	4.67	4.67	-	-	-	-	-	-	-	47.10
WU	557-100	Water Infrastructure Rehabilitation	1.50	1.50	1.50	1.50	22.60	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84.10
WU	557-101	Water Mains - Installation	3.13	3.13	3.13	34.23	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99.10
WU	557-130	Water System Cathodic Protection	2.00	2.00	2.00	2.00	15.33	3.33	3.33	3.33	3.33	3.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40.00
WU	557-133	Meter Replacement Program	-	-	-	3.33	3.33	26.03	6.10	6.10	6.10	6.10	6.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.20
WU	557-400	Valve and Hydrant Exercising - Annual	3.67	3.67	23.00	4.33	4.33	4.33	4.33	4.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.00
WU	557-638	Water Audit	2.25	2.25	2.25	18.60	4.75	4.75	4.75	4.75	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.10
WU	557-689	Urgent Needs Water Engineering Services	1.67	1.67	1.67	1.67	1.67	29.88	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.30
WU	NEW	Water Main Rehabilitation and Replacement in Identified Areas	2.10	2.10	2.10	2.10	23.20	11.10	11.10	11.10	11.10	11.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.10
WU	NEW	Large Main Rehab & Replacement, cast iron and steel	3.50	3.50	34.05	10.55	10.55	10.55	10.55	10.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93.80
WU	NEW	Large Valve Replacement	1.67	1.67	1.67	1.67	1.67	22.60	4.33	4.33	4.33	4.33	4.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52.60
WU	NEW	SCADA Upgrades	1.29	1.29	1.29	1.29	1.29	1.29	27.29	6.00	6.00	6.00	6.00	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	65.00
WU	NEW	Water modeling	1.29	1.29	1.29	1.29	1.29	1.29	23.89	6.00	6.00	6.00	6.00	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	61.60
WU	NEW	Leak Detection & Rehab – Large mains	1.57	1.57	1.57	1.57	1.57	1.57	23.39	7.22	7.22	7.22	7.22	7.22	-	-	-	-	-	-	-	-	-	-	-	-	-	68.90

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WU	557-687	Large Main Rehab & Replacement, PCCP	2.07	2.07	2.07	2.07	2.07	2.07	32.62	10.55	10.55	10.55	10.55	10.55	-	-	-	-	-	-	-	-	-	-	-	-	-	97.80
WF	557-068	Loch Raven - Roads & Culvert repair	2.50	2.50	2.50	29.33	6.83	6.83	6.83	6.83	6.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.00
WF	557-068	Pretty Boy Reservoir - Roads & Culvert repair	3.33	3.33	30.72	7.38	7.38	7.38	7.38	7.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.30
WF	557-068	Liberty Reservoir - Roads & Culvert repair	3.33	3.33	30.72	7.38	7.38	7.38	7.38	7.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.30
WF	557-070	Watershed Bridge Repair	1.64	1.64	1.64	1.64	1.64	1.64	20.53	5.58	5.58	5.58	5.58	5.58	-	-	-	-	-	-	-	-	-	-	-	-	-	58.30
WF	557-158	Earthen Dam Improvement Program WC-1127	2.50	2.50	2.50	2.50	23.50	5.00	5.00	5.00	5.00	5.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.50
WF	557-300	Urgent Needs Water Facilities - Annual Improvements	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	26.04	5.17	5.17	5.17	5.17	5.17	-	-	-	-	-	-	-	-	-	-	-	62.10
WF	557-312	Montebello WTP 1 & 2 Improvements	-	-	-	-	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	22.32	4.33	4.33	4.33	4.33	4.33	-	-	-	54.60
WF	557-501	Montebello Water Filtration Plant Laboratory Facilities	2.50	2.50	2.50	2.50	17.27	8.47	8.47	8.47	8.47	8.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69.60
WF	557-696	Chlorine Handling Safety Improvements WC-1150	1.64	1.64	1.64	1.64	1.64	1.64	24.46	7.72	7.72	7.72	7.72	7.72	-	-	-	-	-	-	-	-	-	-	-	-	-	72.90
WF	557-709	Finished Water Improvements - Montebello 2 FW Reservoir	2.70	2.70	2.70	2.70	24.22	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76.10
WF	557-709	Finished Water Improvements - Guilford FW Reservoir	1.64	1.64	1.64	1.64	1.64	1.64	25.66	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	76.60
WF	557-713	Finished Water Improvements - Towson FW Reservoir	3.13	3.13	3.13	27.14	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77.60
WF	557-715	UV disinfection - Ashburton FW Reservoir	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	36.13	9.85	9.85	9.85	9.85	9.85	-	-	-	-	-	-	-	-	-	-	-	95.60
WF	557-716	UV disinfection - Druid Lake FW Reservoir	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	36.13	9.85	9.85	9.85	9.85	9.85	-	-	-	-	-	-	-	-	-	-	-	95.60
WF	557-727	Deer Creek Pumping Station Improvements	3.38	3.38	3.38	24.21	5.83	5.83	5.83	5.83	5.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.50
WF	557-730	Fullerton Water Filtration Plant WC 1169	-	-	-	-	-	-	-	-	-	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	23.93	8.88	8.88	8.88	8.88	8.88	-	79.60
WF	557-731	Montebello Water Recycle Program	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	6.91	5.63	5.63	5.63	5.63	5.63	-	-	-	-	-	-	-	-	-	-	-	45.30
WF	557-920	Maint Bldg. Impr. At Loch Raven Dam	2.50	2.50	2.50	2.50	19.82	4.02	4.02	4.02	4.02	4.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.90
WF	557-921	Maint Bldg. Impr. At Liberty Dam WC 1207	1.79	1.79	1.79	1.79	1.79	1.79	12.89	3.60	3.60	3.60	3.60	3.60	-	-	-	-	-	-	-	-	-	-	-	-	-	41.60
WF	557-917	Guilford Pumping Station Rehabilitation WC 1120	1.64	1.64	1.64	1.64	1.64	1.64	31.19	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	73.80
WF	557-922	Vernon Pump Station Rehabilitation	2.30	2.30	2.30	2.30	21.85	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.80
WF	557-923	Cromwell Pump Station Rehabilitation	2.30	2.30	2.30	2.30	21.85	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63.80
WF	557-924	Pikesville Pump Station Rehabilitation	2.08	2.08	2.08	2.08	2.08	31.63	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.80
WF	557-926	Towson Pump Station Rehabilitation	2.08	2.08	2.08	2.08	2.08	31.63	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.80
WF	557-928	Ashburton Pump Station Rehabilitation	1.64	1.64	1.64	1.64	1.64	1.64	31.19	6.55	6.55	6.55	6.55	6.55	-	-	-	-	-	-	-	-	-	-	-	-	-	73.80
WF	557-927	Ashburton Chemical Laboratory	2.50	2.50	2.50	2.50	17.27	8.47	8.47	8.47	8.47	8.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69.60
WF	557-928	Urgent needs - Water Facilities Engineering	4.17	4.17	38.38	8.22	8.22	8.22	8.22	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87.80
WF	557-573	Raw water Tunnel Inspections	4.17	4.17	27.68	9.72	9.72	9.72	9.72	9.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84.60

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WF	NEW	Water Recycling and Solids Handling - Ashburton	1.56	1.56	1.56	1.56	1.56	1.56	1.56	33.05	8.88	8.88	8.88	8.88	8.88	-	-	-	-	-	-	-	-	-	-	-	-	88.40
WF	NEW	Inspection/Maintenance of PS'S	-	-	-	-	-	-	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	20.34	8.22	8.22	8.22	8.22	8.22	72.10
WF	NEW	Personnel training in Electrical and Instrumentation certification.	1.67	1.67	1.67	1.67	1.67	11.72	3.75	3.75	3.75	3.75	3.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.80
WF	NEW	Staffing Needs	1.67	1.67	1.67	1.67	1.67	19.30	6.33	6.33	6.33	6.33	6.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59.30
WF	NEW	Preventive Maintenace Program	1.83	1.83	1.83	1.83	1.83	29.77	8.33	8.33	8.33	8.33	8.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80.60
WF	NEW	Montebello Washwater Lake Dredging & Remediation	3.13	3.13	3.13	16.09	4.17	4.17	4.17	4.17	4.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46.30
WF	NEW	Hydropower Study	1.56	1.56	1.56	1.56	1.56	1.56	1.56	5.95	4.38	4.38	4.38	4.38	4.38	-	-	-	-	-	-	-	-	-	-	-	-	38.80
WF	NEW	Baltimore City Water Bottling - Feasibility Study	-	-	-	-	-	-	-	-	1.79	1.79	1.79	1.79	1.79	1.79	6.75	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	25.80
WF	NEW	Water Supply Capacity Analysis	-	-	-	-	-	-	-	-	-	-	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	23.98	11.10	11.10	11.10	11.10	11.10	-	89.70
WWU	551-144	GIS Updates & Mapping Program	3.83	3.83	25.60	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.60
WWU	551-404	Improvements/Rehab of Existing Sanitary Sewer	4.50	4.50	27.10	8.50	8.50	8.50	8.50	8.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78.60
WWU	551-410	Herring Run Interceptor improvements	6.25	34.93	12.08	12.08	12.08	12.08	12.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101.60
WWU	551-569	Urgent Need Sanitary Design Services	1.79	1.79	1.79	1.79	1.79	1.79	23.55	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	72.60
WWU	551-609	SW Diversion Pressure Sewer Improvements	3.13	3.13	3.13	34.89	7.67	7.67	7.67	7.67	7.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82.60
WWU	551-611	Low Level Sewershed Improvements	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	38.38	10.50	10.50	10.50	10.50	10.50	-	-	-	-	-	-	-	-	-	-	-	101.10
WWU	551-612	Outfall Sewershed Improvements	-	-	-	-	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	37.57	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	98.10
WWU	551-614	Dundalk Sewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	38.00	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	-	-	-	-	-	-	-	98.10
WWU	551-616	Patapsco Sewershed Improvements	1.56	1.56	1.56	1.56	1.56	1.56	1.56	38.00	9.83	9.83	9.83	9.83	9.83	-	-	-	-	-	-	-	-	-	-	-	-	98.10
WWU	551-620	High LevelSewershed Improvements	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	42.39	11.00	11.00	11.00	11.00	11.00	-	-	-	-	-	-	-	-	-	-	-	108.50
WWU	551-622	Gwynns FallsSewershed Improvements	-	1.56	1.56	1.56	1.56	1.56	1.56	1.56	41.90	10.33	10.33	10.33	10.33	10.33	-	-	-	-	-	-	-	-	-	-	-	104.50
WWU	551-624	Herring Run Sewershed Improvements	-	-	-	-	-	-	-	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	43.06	11.67	11.67	11.67	11.67	11.67	-	-	-	-	112.50
WWU	551-626	Jones Falls Sewershed Improvements	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	43.82	12.67	12.67	12.67	12.67	12.67	-	-	-	-	-	-	-	-	-	-	117.50
WWU	551-627	Wet Weather Program Operation and Management	3.13	3.13	3.13	45.63	12.50	12.50	12.50	12.50	12.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117.50
WWU	NEW	Sanitary Sewer Interceptors, Siphon And Right of Way Cleaning	2.08	2.08	2.08	2.08	2.08	41.25	9.17	9.17	9.17	9.17	9.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97.50
WWF	551-526	Back River Digester Renovation SC-8526	2.25	2.25	2.25	18.43	2.08	2.08	2.08	2.08	2.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35.60
WWF	551-528	Patapsco ENR Denitrification and Nitrification	2.67	2.67	2.67	2.67	2.67	35.12	8.35	8.35	8.35	8.35	8.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90.20
WWF	551-533	SCADA System Upgrades, Var. Pumping Stations	3.33	3.33	27.35	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.10
WWF	551-533	Annual Facilities Improvements	2.50	2.50	2.50	12.22	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.80
WWF	551-533	Back River Facilities Improvements	2.00	2.00	2.00	2.00	7.13	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.30

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WWF	551-533	Patapsco Facilities Improvements	1.43	1.43	1.43	1.43	1.43	1.43	14.86	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	32.60
WWF	551-557	Enhanced Nutrient Removal at Back River WWTP, SC-877, SC-882	-	-	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	28.60	6.68	6.68	6.68	6.68	6.68	-	-	-	-	-	-	-	80.20
WWF	551-561	Back River Settling Tanks	2.00	2.00	2.00	2.00	13.83	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31.00
WWF	551-585	Pat LOX Plant Upgrade SC-868	2.50	2.50	2.50	26.92	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.50
WWF	551-681	WW Facilities Security Improvements	2.00	2.00	2.00	2.00	3.00	1.00	1.00	1.00	1.00	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.00
WWF	551-685	Back River Scum & Grease System	4.17	4.17	11.08	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.50
WWF	551-687	Patapsco Chlorine Conversion SC-857	5.00	30.50	2.50	2.50	2.50	2.50	2.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48.00
WWF	551-689	Back River WWTP Primary and Influent Facilities Rehabilitation SC-918	1.50	1.50	1.50	1.50	1.50	36.92	5.42	5.42	5.42	5.42	5.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.50
WWF	551-692	Back River Electrical System Upgrade	-	-	2.25	2.25	2.25	15.22	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30.30
WWF	551-692	Patapsco Electrical System Upgrade	2.00	2.00	2.00	2.00	9.97	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.30
WWF	551-752	McComas Street PS/FM Upgrade	5.00	20.93	2.63	2.63	2.63	2.63	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.10
WWF	551-755	Pump Station Force Main Improvements, various locations	2.25	2.25	2.25	18.18	2.63	2.63	2.63	2.63	2.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38.10
WWF	551-503: On Call	On-Call Engineering Services	-	-	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.00	-	-	-	-	-	-	-	-	13.00
WWF	NEW	Optimization of Inventory Control	1.67	1.67	1.67	1.67	1.67	8.08	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.50
WWF	NEW	Expansion of Co-Gen Facility (4th Boiler Given Price Natural Gas)	1.67	1.67	1.67	1.67	1.67	3.33	1.67	1.67	1.67	1.67	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.00
WWF	NEW	Redundancy Systems for Pump Stations/Force Mains	1.79	1.79	1.79	1.79	1.79	1.79	11.20	1.42	1.42	1.42	1.42	1.42	-	-	-	-	-	-	-	-	-	-	-	-	-	29.00
WWF	NEW	Patapsco WWTP Chrome Contaminated Soil Removal	-	-	-	-	-	-	-	-	-	1.13	1.13	1.13	1.13	1.13	1.13	1.13	7.76	3.33	3.33	3.33	3.33	3.33	-	-	-	32.30
SWU	NEW	Conveyance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34.33	8.33	8.33	8.33	8.33	8.33	76.00
SWF	NEW	Outfalls	-	-	-	-	-	-	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	33.55	10.42	10.42	10.42	10.42	10.42	92.60
WU	NEW	Pipelines/Distribution System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WF	NEW	Montebello 1 Membrane Filteration $60M	-	-	-	-	-	-	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	31.27	7.92	7.92	7.92	7.92	7.92	75.50
WF	557-300	Montebello Generator $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	30.39	6.75	6.75	6.75	6.75	6.75	72.50
WF	NEW	Montebello Chemical Systems Upgrade $35M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	30.25	6.75	6.75	6.75	6.75	6.75	70.50
WF	NEW	Montebello Preliminary/Settling Upgrade $35M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	29.02	8.92	8.92	8.92	8.92	8.92	80.10
WF	NEW	Ashburton Recycle Facilities $30M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	7.00
WF	NEW	Ashburton Generator $10M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	27.89	6.75	6.75	6.75	6.75	6.75	70.00
WF	NEW	Ashburton Preliminary/Settling Upgrade $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	26.59	8.92	8.92	8.92	8.92	8.92	78.60
WF	NEW	Pumping Stations	-	-	-	-	-	-	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	30.09	6.55	6.55	6.55	6.55	6.55	69.80
WF	NEW	Reservoirs & Tanks	-	-	-	-	-	-	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	35.53	9.85	9.85	9.85	9.85	9.85	93.60

Project Type	CIP Number	Project	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	Total Benefits per Project
WWU	NEW	Collection System	-	-	-	-	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	27.53	7.22	7.22	7.22	7.22	7.22	66.40
WWF	NEW	Patapsco Secondary Treatment Upgrades $50M	-	-	-	-	-	-	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	-	-	-	-	-	6.00
WWF	NEW	Patapsco Sludge Digestion Facilities $50M	-	-	-	-	-	-	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	-	-	-	-	-	6.00
WWF	NEW	Patapsco Green Energy $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Patapsco Hypochlorite Generation Facility $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Patapsco Pelletization Facility Upgrade $40M	-	-	-	-	-	-	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-	-	-	-	-	7.00
WWF	NEW	Patapsco Chemical Facilities Upgrade $10M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Back River Secondary Treatment Upgrades $75M	-	-	-	-	-	-	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	-	-	-	-	-	4.00
WWF	NEW	Back River Egg-Shaped Digester Additions $75M	-	-	-	-	-	-	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	-	-	-	-	-	4.00
WWF	NEW	Back River Sludge Storage Facility $25M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Back River Pelletization Faciltiy Upgrade $60M	-	-	-	-	-	-	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	-	-	-	-	-	5.00
WWF	NEW	Back River Hypochlorite Generation Facility $30M	-	-	-	-	-	-	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	-	-	-	-	-	8.00
WWF	NEW	Back River Green Energy $15M	-	-	-	-	-	-	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	-	-	-	-	-	9.00
WWF	NEW	Pumping Stations & Force Mains	-	-	-	-	-	-	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	-	-	-	-	-	3.00
Total Benefits per Year			416	579	829	986	814	949	960	755	763	476	317	248	180	116	95	91	90	57	91	414	136	124	117	117	97	9,817

APPENDIX F

FINANCIAL ANALYSIS TABLES AND CHARTS

Table F.1, Customer Impacts and Affordability Analysis – Status Quo

CITY OF BALTIMORE
WATER & SEWER FINANCIAL PLANNING MODEL
[redacted]

		FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
		Projected	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*	*Projected*
Projected Water Rate Increase	Status Quo	9.0%	20.0%	20.0%	18.0%	[redacted]													
Projected Sewer Rate Increase	Status Quo	9.0%	14.0%	13.0%	9.0%	[redacted]													
Quarterly Stormwater Charge		$ 0.00	$ 18.00	$ 18.00	$ 18.00	[redacted]													

			FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Customer Impact Level 1																				
Water Bill	21	ccf	$ 67.16	$ 80.60	$ 96.73	$ 114.14	[redacted]													
Sewer Bill	21	ccf	105.28	117.92	131.32	141.80														
Stormwater Charge			0.00	18.00	18.00	18.00														
Quarterly Bill			$ 172.44	$ 216.52	$ 246.04	$ 273.94	$		360.21											
Annual Water Bill			$ 268.63	$ 322.39	$ 386.90	$ 456.58														
Annual Sewer Bill			421.12	471.68	525.28	567.19														
Annual Stormwater Charge			0.00	72.00	72.00	72.00														
Total			$ 689.74	$ 866.07	$ 984.18	$ 1,095.77														
Customer Impact Level 2																				
Water Bill	39	ccf	$ 124.70	$ 149.66	$ 179.62	$ 211.96	$													
Sewer Bill	39	ccf	182.66	206.14	231.02	250.48														
Stormwater Charge			0.00	18.00	18.00	18.00														
Quarterly Bill			$ 307.36	$ 373.80	$ 428.64	$ 480.44	$	$												
Annual Water Bill			$ 498.81	$ 598.65	$ 718.46	$ 847.82	$													
Annual Sewer Bill			730.64	824.56	924.08	1,001.93														
Annual Stormwater Charge			0.00	72.00	72.00	72.00														160.00
Total			$ 1,229.46	$ 1,495.21	$ 1,714.54	$ 1,921.75														

Table F.2, Customer Impacts and Affordability Analysis – Scenario 1B

CITY OF BALTIMORE
WATER & SEWER FINANCIAL PLANNING MODEL
[redacted]

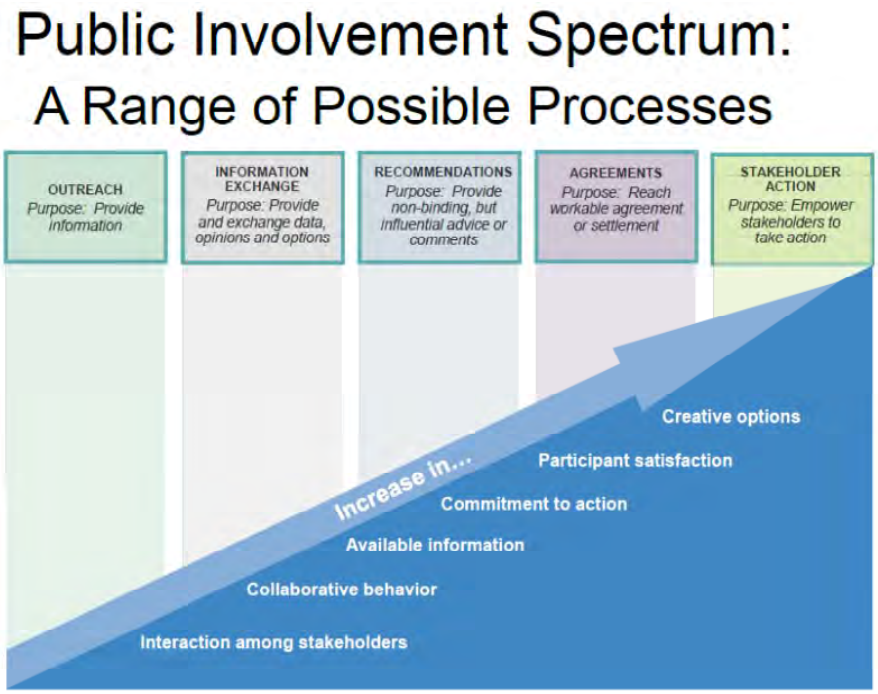
		FY 2013 Projected	FY 2014 Projected	FY 2015 Projected	FY 2016 Projected	FY 2017 Projected	FY 2018 Projected	FY 2019 Projected	FY 2020 Projected	FY 2021 Projected	FY 2022 Projected	FY 2023 Projected	FY 2024 Projected	FY 2025 Projected	FY 2026 Projected	FY 2027 Projected	FY 2028 Projected	FY 2029 Projected	FY 2030 Projected
Projected Water Rate Increase	Scenario 1B	9.0%	19.0%	17.0%	15.0%	[redacted]													
Projected Sewer Rate Increase	Scenario 1B	9.0%	13.0%	8.0%	8.0%	[redacted]													
Quarterly Stormwater Charge		$ 0.00	$ 18.00	$ 18.00	$ 18.00	$ 21.00	$ 21.00	$[redacted]											

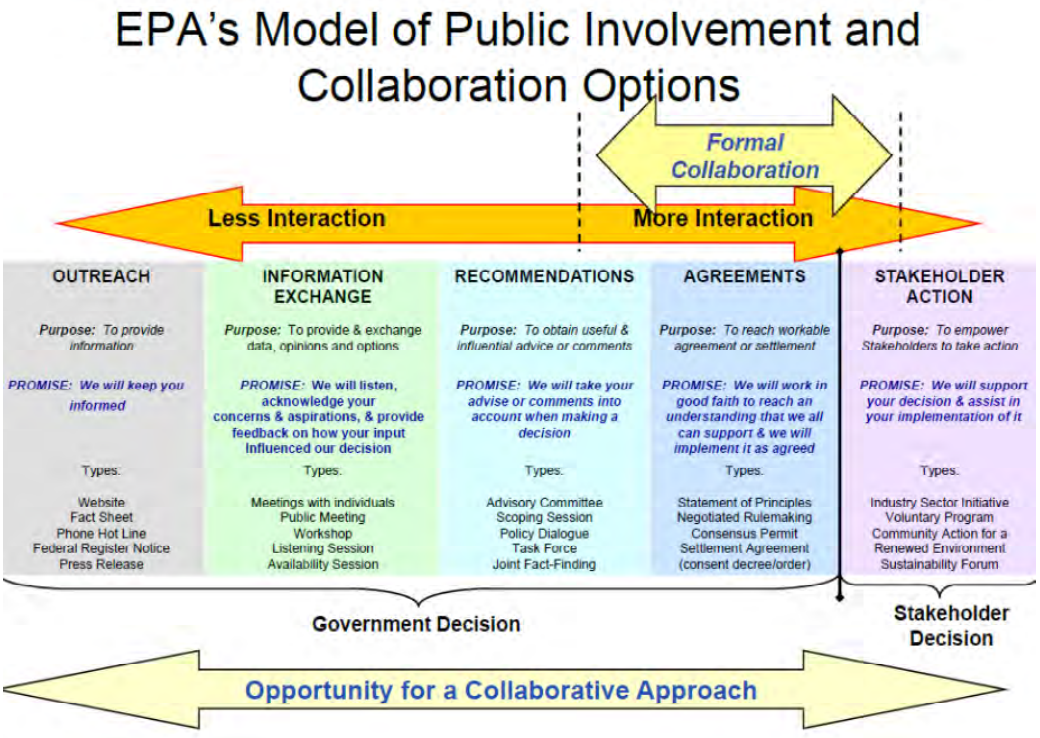
			FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Customer Impact Level 1																				
Water Bill	21	ccf	$ 67.16	$ 79.93	$ 93.52	$ 107.56	[redacted]													
Sewer Bill	21	ccf	105.28	117.02	125.19	134.01														
Stormwater Charge			0.00	18.00	18.00	18.00														
Quarterly Bill			$ 172.44	$ 214.94	$ 236.71	$ 259.57	$													
Annual Water Bill			$ 268.63	$ 319.70	$ 374.09	$ 430.24	$													
Annual Sewer Bill			421.12	468.07	500.75	536.03														
Annual Stormwater Charge			0.00	72.00	72.00	72.00														
Total			$ 689.74	$ 859.77	$ 946.84	$ 1,038.27	$													
Customer Impact Level 2																				
Water Bill	39	ccf	$ 124.70	$ 148.42	$ 173.66	$ 199.72	[redacted]													
Sewer Bill	39	ccf	182.66	204.46	219.63	236.01														
Stormwater Charge			0.00	18.00	18.00	18.00														0.00
Quarterly Bill			$ 307.36	$ 370.88	$ 411.29	$ 453.73	$													
Annual Water Bill			$ 498.81	$ 593.66	$ 694.63	$ 798.88	$													
Annual Sewer Bill			730.64	817.85	878.53	944.05														8
Annual Stormwater Charge			0.00	72.00	72.00	72.00														
Total			$ 1,229.46	$ 1,483.51	$ 1,645.16	$ 1,814.93	$													

APPENDIX G

STAKEHOLDER DIAGRAMS

Appendix G, Stakeholder Diagrams





Outreach

- **One-way transfer of information from EPA to the public as a whole**
- **Provides transparency about data, options, schedules and decisions**
- **Increases stakeholder knowledge of EPA programs and issues**
- **Reduces misinformation and misunderstanding**
- **Complies with legal notice requirements**
- **Major component of all other public involvement processes**
- **Can be implemented quickly**

OUTREACH

Purpose:

Provide information

Methods:

Website
Fact Sheet
Press Release
Federal Register Notice

Information Exchange

- **Two-way transfer of information**
- **Open invitation to all or focused on particular stakeholders**
- **Obtain input from a wide range of interested parties**
- **Stakeholders can educate each other in addition to EPA**
- **Compile a knowledge base of the public's interests, ideas and needs**
- **Better understand and consider issues related to a particular decision**
- **Not intended to build consensus or agreement**

INFORMATION EXCHANGE

Purpose:

Provide and exchange data, opinions and options

Methods:

Meetings with individuals
Public meetings
Workshops
Listening sessions
Availability sessions

Recommendations

- EPA interaction with stakeholder groups rather than general public
- Develop individual or group advice for EPA to consider when taking action
- Integrate technical or scientific information for improved decisions
- Reach understanding on data needs and/or policy options prior to EPA decision making
- Stimulate joint thinking to solve persistent problems
- Work through stakeholder concerns while reserving decision making authority

RECOMMENDATIONS

Purpose:

Provide non-binding but influential advice or comments

Methods:

Advisory committees
Scoping sessions
Policy dialogues
Task force
Joint fact finding

Agreements

- EPA and each stakeholder group commit to a decision on EPA action
- Involve stakeholders in developing creative solutions that they can "live with"
- Coordinate multiple agencies/levels of government in decision making to improve implementation
- Bring closure to decisions on proposals or issues where buy-in is needed from other parties
- Work out a mutually acceptable approach with parties who have the power to block or further implementation
- Achieve high degree of compliance by affected parties

AGREEMENTS

Purpose:

Reach workable agreement or settlement

Methods:

Negotiated rulemaking
Consensus permit
Settlement agreement
Consent Order
Statement of principles

Stakeholder Action

- Regulation might not be the only or most appropriate solution
- Involve stakeholders in developing creative solutions that they will implement
- EPA provides leadership, resources and energy in solving a problem that it alone cannot solve.
- Harness the energies of multiple parties to deal with different parts of the problem
- Achieve voluntary compliance by affected parties

STAKEHOLDER ACTION

Purpose:

Empower stakeholders to take action

Methods:

Industry Sector Initiatives
Voluntary Programs
Watershed Collaboratives